

BRITISH MUSEUM (NATURAL HISTORY)

*Dept. of Entomology,
Keeper's Study.
[Recd. 5.vii.1927]*

INSECTS OF SAMOA AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

PART II. HEMIPTERA

FASC. 1. Pp. 1-45

FULGOROIDEA

By F. MUIR

PSYLLIDAE (CHERMIDAE)

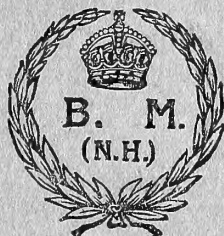
By PROF. D. L. CRAWFORD

AND

COCCIDAE, APHIDIDAE and ALEYRODIDAE

By F. LAING, M.A., B.Sc.

WITH THIRTY-TWO TEXT-FIGURES



LONDON:

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1927

INSECTS OF SAMOA

AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

Although a monograph, or series of papers, dealing comprehensively with the land arthropod fauna of any group of islands in the South Pacific may be expected to yield valuable results, in connection with distribution, modification due to isolation, and other problems, no such work is at present in existence. In order in some measure to remedy this deficiency, and in view of benefits directly accruing to the National Collections, the Trustees of the British Museum have undertaken the publication of an account of the Insects and other Terrestrial Arthropoda collected in the Samoan Islands, in 1924-1925, by Dr. P. A. Buxton and Mr. G. H. E. Hopkins, during the Expedition of the London School of Hygiene and Tropical Medicine to the South Pacific. Advantage has been taken of the opportunity thus afforded, to make the studies as complete as possible by including in them all Samoan material of the groups concerned in both the British Museum (Natural History) and (by courtesy of the authorities of that institution) the Bishop Museum, Honolulu.

It is not intended that contributors to the text shall be confined to the Museum Staff or to any one nation, but, so far as possible, the assistance of the leading authorities on all groups to be dealt with has been obtained.

The work will be divided into eight "Parts" (see p. 3 of wrapper), which will be subdivided into "Fascicles." Each of the latter, which will appear as ready in any order, will consist of one or more contributions. On the completion of the work it is intended to issue a general survey, summarising the whole and drawing from it such conclusions as may be warranted.

E. E. AUSTEN,
Keeper of Entomology.

BRITISH MUSEUM (NATURAL HISTORY),
CROMWELL ROAD, S.W.7.



Gustav Fischer, Verlagsbuchhandlung, Jena.

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Archiv für Protistenkunde	19....., Bd.	Nr.
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Centralblatt für Bakteriologie, II. Abt.	19....., Bd.	Nr.
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127 Insects of Samoa and other Samoan terrestrial Arthropoda. Part II, Fasc. 1. Fulgoroidea by F. Muir, Psyllidae (Chermidae) by D. L. Crawford, Coccidae, Aphididae and Aleyrodidae by F. Laing. Part III. Lepidoptera. Fasc. 1. Butterflies of Samoa and some neighbouring Islands-Groups by G. H. E. Hopkins. Fasc. 2. Micro-Lepidoptera by Edward Meyrick. Part VI. Diptera. Fasc. 1. Streblidae and Nycteribiidae by L. Falcz, Hippoboscidae by G. F. Ferris. Part VII. Other orders of Insects. Fasc. 1. Isoptera. Fam. Termitidae by F. G. Hill and Odonata by F. C. Fraser. Part VIII. Terrestrial Arthropoda other than Insects. Fasc. 1. Isopoda terrestria by H. G. Jackson, Scorpionoidae by P. A. Buxton, Acarina by S. Hirst. (London, British Museum Natural History), 253 S., 7 Taf., 2 Kart., 14 Fig. 1927.

Es ist zu begrüßen, daß sich das Britische Museum entschlossen hat, die Insektenwelt des Stillen Ozeans monographisch bearbeiten zu lassen. Das Material haben Buxton, Hopkins u. a. gesammelt. Die weitverbreiteten Fulgoriden-Arten gehören zu den auf Gräsern und Kulturpflanzen lebenden Delphaciinen; die auf Strauch und Baum lebenden Asiracinen geben den höchsten Prozentsatz endemischer Arten, z. B. *Neolollius* und *Buxtoniella*. *Megamelus proserpina* Kirk. lebt auf *Colocasia esculenta*, *Perkinsiella vitiensis* Kirk. auf Zuckerrohr. 4 neue Psylliden-Arten; *Megatrioza vitiensis* Kirk. lebt auf *Eugenia malaccensis*. Unter den 36 Cocciden-Arten ist neu *Chrysomphalus buxtoni*. Von den 5 Blattläusen lebt *Aphis gossypii* auf *Morinda citrifolia*, *Aph. laburni* auf Leguminosen, *A. tavaresi* auf Zitronenbaum, *A. nerii* auf *Asclepias*, *Toxoptera aurantii* auf *Hibiscus tiliaceus* und Kakao. Von den 2 Aleyrodiden lebt *Neomaskellia bergii* oft auf Zuckerrohr, *Aleuroplatus samoanus* auf *Croton*. — Die 28 Tagfalter sind östlichen Ursprungs; die Nährpflanzen für deren Raupen sind notiert, letztere sind oft Schädlinge. Nur *Danaida archippus* F. stammt aus Amerika und breitet sich aus; sie besucht die Blüten von 3 Pflanzenarten, die Raupe frißt an *Asclepias curassavica*. Unter den Microlepidopteren sind 40 weitverbreitet und 137 durch den Menschen eingeschleppt, $\frac{2}{3}$ der Arten sind endemisch, besonders die 3 monotypischen Genera. Hawaii hat mehr Endemismen und eigenartige Gattungen. Es fehlen auf der ganzen Inselwelt die Pterophoriden und Oecophoriden. Viele Arten sind Schädlinge der Kulturpflanzen, z. B. *Prays citri* in Trieben der Orangenbäume, *Pachyrhabda antinoma* in kultivierten Farnen. *Hieroxestis citrinodes* auf faulen Früchten von *Vigna sinensis*. — Von den Fledermausparasiten lebt die Streblide *Nycteribosca buxtoni* an *Emballonoma semicaudata* Peale, die Nycteribiide *Cyclopodia inclita* an *Pteropus*-Arten. Folgende Hippobosciden sind interessant: *Ornithoica romiscua* an *Myiagra vanicorensis* und *Demiegretta sacra*, *O. pusilla* an *Aplonis trifusca* und *Halcyon juliae*, *Ornithoza metallica* an *Aplonis brevirostris* und *Halcyon juliae*, *Lynchia samoana* n. sp. an *Merula samoensis* und *Myiagra vanicorensis*, *Ornithoctona nigricans* an *Ptilopus peroussi*. — 5 Termiten werden beschrieben: *Calotermes samoanus*, *Protrichotermes inopinatus*, *Microtermes peraffinis*, *C. buxtoni*, *C. Xantholabrum* und *C. repandus*. 28 Arten von Odonaten, 9 Landisopoden, 2 Skorpione, 4 Pseudoskorpione. Nur 1 Milbenart, *Uropoda samoae* n. sp. auf dem Fühler der *Calotermes Xantholabrum*.
[Matouschek.]

Halcyon juliae, *Lynchia samoana* n. sp. an *Merula samoensis* und *Myiagra vanicorensis*, *Ornithoctona nigricans* an *Ptilopus peroussi*. — 5 Termiten werden beschrieben: *Calotermes samoanus*, *Protrichotermes inopinatus*, *Microtermes peraffinis*, *C. buxtoni*, *C. Xantholabrum* und *C. repandus*. 28 Arten von Odonaten, 9 Landisopoden, 2 Skorpione, 4 Pseudoskorpione. Nur 1 Milbenart, *Uropoda samoae* n. sp. auf dem Fühler der *Calotermes Xantholabrum*.
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426 Fillyard, R. J., The Insects of Australia and New Zealand. 560 S., viele Fig., 44 Taf. 1926 (August Robertson, Sydney). Behandelt in üblicher Weise als Einleitung den äußeren und inneren Bau der Insekten sowie deren Entwicklungsgeschichte und dann die Insekten-Ordnungen in systematischer Folge. Zu den einzelnen systematischen Gruppen, deren Charakteristik gegeben wird, führen Bestimmungstabellen. Von den Arten sind nur die wichtigsten aufgeführt. Zahlreiche Abbildungen begleiten den Text. Angehängt ist ein Kapitel über fossile Insekten des behandelten Gebietes und ein weiteres über Sammeln und Konservieren von Insekten.

425 Teissier, G., Sur les dysharmonies de la croissance chez les Insectes in: CR. Soc. Biol. Paris, 99²², 297—299. 1928. Die bei verschiedenen Organen der Insekten beobachteten Disharmonien der Entwicklung folgen dem Formgesetz $(I) y = Xx^a$, Y stellt die Länge (oder die Masse) der disharmonischen Organe, x die Länge (oder die Masse) eines mit dem ganzen Körper proportionell wachsenden Organs repräsentiert. Am interessantesten erscheint die Disharmonie des Nervensystems. Aus der Messung verschiedener Ganglien bei den Larven von *Chaoborus crystallinus* (de Geer), *Tenebrio molitor* L., *Notonecta glauca* L., *Dixippus morosus* erfolgt, daß das Wachstum dieser Ganglien nach dem oben genannten Gesetz von staten geht, wobei $a = \frac{2}{3}$ ist und das Gesetz das-selbe für verschiedene Ganglien eines selben Tieres bleibt. [Benzon.]

Tenebrio molitor. [Benzon.]

429 Handschin, Eduard, Über die von H. Gauthier in den Sümpfen Algiers gesammelten Collembolen in: Arch. Naturg. (1926), 92 A 7, 1—18, 1 Fig. 1928. Das Material umfaßt 32 Species, die nach Aufzählung auf folgende Biotope verteilt werden: I. Die Formen perennierender Gewässer, und zwar a) der Sümpfe und Seeufer, b) der Kanäle und Bewässerungsgräben. Ständige auf der Wasseroberfläche lebende Formen zeigen in der lamellenartigen Verbreitung ihres Mucro eine morphologische Anpassung. II. Die Formen der temporären Gewässer, a) accidentell nasse Stellen, b) überschwemmte Felder. III. Formen sandiger Steilufer und Humusbewohner der Ufernähe; die sandigen Steilufer sehr tierarm. Ganz allgemein ist die Collembolen-fauna der Sümpfe Algiers eine palaearktische; die Südgrenze der Palaearktis wird (ebenso wie der Nearktis) durch das südlichste Vorkommen von *Orchesella* und *Tomocerus* geradezu gekennzeichnet. Einige östliche Faunen-geschlechtsreife. Häutungen nicht gesehen. [E. Marcus.]

7 Insects of Samoa and other Samoan terrestrial Arthropoda. Part II, Fasc. 1. Fulgoroidea by F. Muir, Psyllidae (Chermidae) by D. L. Crawford, Coccidae, Aphididae and Aleyrodidae by F. Laing. Part III. Lepidoptera. Fasc. 1. Butterflies of Samoa and some neighbouring Islands-Groups by G. H. E. Hopkins. Fasc. 2. Micro-Lepidoptera by Edward Meyrick. Part VI. Diptera. Fasc. 1. Streblidae and Nycteribiidae by L. Falcoz, Hippoboscidae by G. F. Ferris. Part VII. Other orders of Insects. Fasc. 1. Isoptera. Fam. Termitidae by F. G. Hill and Odonata by F. C. Fraser. Part VIII. Terrestrial Arthropoda other than Insects. Fasc. 1. Isopoda terrestria by H. G. Jackson, Scorpionoidae by P. A. Buxton, Acarina by S. Hirst. (London, British Museum Natural History), 253 S., 7 Taf., 2 Kart., 14 Fig. 1927.

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426 Teissier, G., Sur les dysharmonies de la croissance chez les Insectes in: CR. Soc. Biol. Paris, 99 22, 297–299. 1928 e. Die bei verschiedenen Organen der Insekten beobachteten Disharmonien der Entwicklung folgen dem Formgesetz (1) $y = Xx^a$, X stellt die Länge (oder die Masse) der disharmonischen Organe, a , während x die Länge (oder die Masse) eines mit dem ganzen Körper proportionell wachsenden Organs repräsentiert. Am interessantesten erscheint die Disharmonie des Nervensystems. Aus der Messung verschiedener Ganglien bei den Larven von *Chaoborus crystallinus* (de Geer), *Tenebrio molitor* L., *Notonecta glauca* L., *Dixippus morosus* erfolgt, daß das Wachstum dieser Ganglien nach dem oben genannten Gesetz von staten geht, wobei $a = \frac{2}{3}$ ist und das Gesetz daselbe für verschiedene Ganglien eines selben Tieres bleibt. [Benzon.]

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Die Inselwelt des Stillen Ozeans birgt mancherlei zoogeographische Probleme, und es ist daher sehr zu begrüßen, daß auf Grund der durch Buxton und Hopkins angelegten Sammlungen sich das Britische Museum entschlossen hat, eine zusammenfassende faunistische Bearbeitung der Insekten von Samoa und den benachbarten Inselgruppen herauszugeben, die es ermöglichen wird, die Probleme der Artverbreitung und auch der Artbildung durch Isolation einer weiteren Klärung zuzuführen. Doch auch dem Gebiet der angewandten Zoologie wird das Werk wertvolle Förderung bieten.

Unter den Fulgoriden gehören mit einer Ausnahme die weit verbreiteten Arten alle zu den auf Gräsern und anderen Kulturpflanzen lebenden Delphacinen, während die auf Gebüsch und Bäumen lebenden Asiracinen den höchsten Prozentsatz endemischer Arten aufweisen. Zwei Gattungen, *Neolollius* und *Buxtoniella* sind endemisch. Auf Kulturpflanzen leben folgende Arten: *Megamelus proserpina* Kirk auf *Colocasia esculenta*, *Perkinsiella vitiensis* Kirk. an Zuckerrohr. Von Psylliden werden als neu beschrieben *Paurocephala wilderi*, *Tyora buxtoni*, *Megatrioza swezei*, *Trioza samoensis*. *Megatrioza vitiensis* Kirk. fand sich auf Blättern von *Eugenia malaccensis*. Von Cocciden werden 36 Arten aufgeführt, davon als neu beschrieben *Chrysomphalus buxtoni*. An Blattläusen werden nur 5 Arten genannt (*Aphis gossypii* Glov. auf *Morinda citrifolia*, *A. laburni* Kalt. an Leguminosen, *A. nerii* Boyer an eingeführten *Aselepias*, *A. tavaresi* Del Guere. an Zitronenbäumen, *Toxoptera aurantii* Boyer an Kakao und *Hibiscus tiliaceus*. Von den beiden genannten Aleyrodiden ist neu *Aleuroplatus (Orchamus) samoanus* auf *Croton*, während *Neomaskellia bergii* Sign. auf Zuckerrohr häufig ist.

Hopkins zählt 28 Tageschmetterlinge der Samoanischen Fauna auf, die sämtlich mit Ausnahme der aus Amerika eingewanderten *Danaida archippus* F. östlichen Ursprungs sind. Letztere Art erschien 1863

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in Tonga, 1867 in Tutuila, erst nach 1869 in West-Samoa. Die Raupe frisst an *Asclepias curassavica* L., der Falter besucht außerdem die Blüten von *Ageratum conyzoides*, *Lantana camara* und

fusca und *Halcyon juliae*), *Ornithoeza metallica* Schiner (an *Aplonis brevirostris* und *Halcyon juliae*), *Lynchia samoana* n. sp. (an *Merula samoensis* und *Myiagra vanicorensis*), *Ornithoctona nigricans* Leach (an *Ptilopus peroussi*).

Von Termiten waren aus Samoa bisher nur 3 Arten bekannt, nämlich *Calotermes samoanus* Holmgr., *Prorhinotermes inopinatus* Silv. und *Microcerotermes peraffinis* Silv. Dazu kommen noch *C. repandus* Hill., *buxtoni* Hill., *xantholabrum* Hill. Die Odonaten sind in 28 Arten, die Landisopoden in 9, Skorpione in 2, Pseudoskorpione in 4 Arten vertreten, während von Milben bisher nur 1 Art, *Uropoda samoae* n. sp. bekannt ist, die auf der Antenne einer Termiten (*Calotermes xantholabrum*) gefunden wurde.

Zacher (Berlin-Steglitz).

verbreitet und als durch den Menschen eingeschleppt angesehen werden können. Zwei Drittel der Arten können als endemisch betrachtet werden. 8 monotypische Gattungen sind endemisch. Im Vergleich dazu hat Hawaii einen weit größeren Reichtum an endemischen und sehr eigenartigen Gattungen. Es fehlen gänzlich die Familien der Pterophoridae und Oecophoridae. Von Schädlingen an Kulturpflanzen werden genannt: *Sphenarches caffer* Zell an Leguminosen und Cucurbitaceen, *Spilonota holotephra* Meyr. an Guava, *Crocidosoma plebeiana* Zell an Hibiscus und Malvaceen, *Polychrosis botrana* Schiff (1 Stück in 2000 Fuß Höhe gefangen), *Argyroploce aprobola* Meyr., polyphag an Mangifera, Cassia, Lantana, Nephelium usw., *Platyedra gossypiella* Saund, *Phthorimaea heliopa* Lw., *Labdia promacha* Meyr. in Stengeln von Leguminosen, *Cajanus* usw., *Pachyrhabda antinoma* Meyr. in kultivierten Farnen, *Prays citri* in Trieben von Orangenbäumen, *Acrocercops cramerella* Snell an *Nephelium litchi* und *lappaceum*, *Hieroxestis citrinodes* Meyr. in Fiji an faulenden Früchten von *Vigna sinensis*.

Falcoz beschreibt die Fledermausparasiten, und zwar von den Strebliden *Nycteribosca buxtoni* (an *Emballonoma semicaudata* Peale), von den Nycteribiiden *Cyclopodia inclita* (an *Pteropus samoensis* Peale n. Pt. tonganus Quoy et Gaymard). Von Hippobosciden nennt Ferris die Arten: *Ornithoica promiscua* Ferris u. Cole (an *Myiagra vanicorensis* und *Demiegretta sacra*), *O. pusilla* Schiner (an *Aplonis atri-*

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in Tonga, 1867 in Tutuila, erst nach 1869 in West-Samoa. Die Raupe frisst an *Asclepias curassavica* L., der Falter besucht außerdem die Blüten von *Ageratum conyzoides*, *Lantana camara* und *Stachytarpheta indica*. Als Nährpflanzen werden ferner genannt: *Tylophora samoensis* für die Raupe von *Danaida melissa* H. S., *Ficus tinctoria* für *Euploea eleutho bourkei* Poult. und *E. schmeltzi schmeltzi* H. S. Es fressen die Raupen von *Acraea andromacha polynesiaca* Rebel an *Passiflora samoensis*, von *Melanitis leda solandra* F. an Cyperaceen, von *Hypolimnas errabunda* n. sp. an der „Samoanischen Erdbeere“, *Cudrania (javanensis?)* von *H. antilope lutescens* Butl. an *Pipturus incanus*, von *H. bolina inconstans* an *Sida rhombifolia*, *H. bolina varik* Esch. an *Pipturus propinquus* und *Sida*, *Issoria sinha bowdenia* Butl. an *Xylosma suaveolens*, *Atella exulans* n. sp. an *Melicetus*, *Papilio godeffroyi* Semper an *Aralia* (wurde von Hopkins nicht gefunden), *Belenois java schmeltzi* n. sp. an Cucurbitaceen, *Jamides argentina* Prittw. an *Vigna lutea*, *Catachrysops cnejus samoensis* H. S. an *Crotolaria striata*, *C. lithargyra pepe* n. sp. an *Desmodium umbellatum*, *Zizera alsulus* H. S. an *Indigofera anil*, *Z. labradus* Godt. an *Indigofera anil*, *Desmod. umbellatum*, in Fiji auch an *Phaseolus adenanthus* und *Vigna catjang*, *Badamia exclamationis* F. an *Terminalia catappa*.

An Mikrolepidopteren werden 137 Arten aufgezählt, von denen 40 weiter verbreitet und als durch den Menschen eingeschleppt angesehen werden können. Zwei Drittel der Arten können als endemisch betrachtet werden, 8 monotypische Gattungen sind endemisch. Im Vergleich dazu hat Hawaii einen weit größeren Reichtum an endemischen und sehr eigenartigen Gattungen. Es fehlen gänzlich die Familien der Pterophoriden und Oecophoriden. Von Schädlingen an Kulturpflanzen werden genannt: *Sphenarches caffer* Zell an Leguminosen und Cucurbitaceen, *Spilonota holotephra* Meyr. an Guava, *Crociosema plebeiana* Zell an Hibiscus und Malvaceen, *Polychrosis botrana* Schiff (1 Stück in 2000 Fuß Höhe gefangen), *Argyroploce aprobola* Meyr., polyphag an Mangifera, Cassia, Lantana, Nephelium usw., *Platyedra gossypiella* Saund, *Phthorimaea heliopa* Lw., *Labdia promacha* Meyr. in Stengeln von Leguminosen, *Cajanus* usw., *Pachyrhabda antinoma* Meyr. in kultivierten Farnen, *Prays citri* in Trieben von Orangenbäumen, *Acrocerops cramerella* Snell an *Nephelium litchi* und *lappaceum*, *Hieroxestis citrinodes* Meyr. in Fiji an faulenden Früchten von *Vigna sinensis*.

Falcoz beschreibt die Fledermausparasiten, und zwar von den Strebliden *Nycteribosca buxtoni* (an *Emballonoma semicaudata* Peale), von den Nycteribiiden *Cyclopodia inclita* (an *Pteropus samoensis* Peale n. Pt. tonganus Quoy et Gaymard). Von Hippobosciden nennt Ferris die Arten: *Ornithoica promiscua* Ferris u. Cole (an *Myiagra vanicorensis* und *Demiegretta sacra*), *O. pusilla* Schiner (an *Aplonis atri-*

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INSECTS OF SAMOA

PART II. FASC. 1

HEMIPTERA

FULGOROIDEA

By F. MUIR

(With 25 Text-figures)



PREVIOUS knowledge of the Fulgoroidea of the Samoan Islands is summed up in a single paper published in 1921,* wherein were listed seven families, nineteen genera, and twenty-six species. In the present contribution eight families, twenty-seven genera, and fifty-one species are dealt with, one genus and seventeen species being described as new. The most interesting addition is the genus *Buxtoniella*, the affinity of which is doubtful.

All except one (*Nisia atrovenosa* (Leth)) of the widely distributed species belong to the family Delphacidae, tribe Delphacini; on the other hand, the subfamily Asiracinae is represented by one genus, which has the highest number of endemic species of any in the Samoan group. The former feed on grass or economic plants, whereas the latter live on trees and bushes. *Nisia atrovenosa* also lives on grasses, and this may have something to do with its wide distribution.

The additions to the list support the general conclusion drawn previously, that the Samoan Islands form an outpost of the Polynesian plateau, and that they derived their Fulgorids from that region, their closest affinity being with Fiji. The specific endemism is high, as thirty-six out of fifty-one species have, so far, only been found in Samoa.† Two genera are endemic, *Neolollius*, closely allied to *Lollius*, and *Buxtoniella*, without any close allies.

* Muir (1921), "On some Samoan Fulgorids," *Proc. Hawaiian Ent. Soc.*, IV, pp. 564-584.

† But, on the other hand, there are very few species confined to particular islands in the Samoan group, and this is the more apparent when we remember that little collecting has been done on Savaii and the Manua Islands.—P. A. BUXTON.

The following table will indicate the distribution of the species as at present known :

	SAVAIU.	Upolu.	TUTUILA.	MANUA GROUP.	FJI ISLANDS.	OTHER LOCALITIES.
CIXIIDAE						
<i>Andes lamononi</i> Muir . . .	×	×	×			
<i>Ptoleria baumanensis</i> (Muir) . . .	×	×	×			
<i>Ptoleria wilkesi</i> (Muir) . . .	×		×			
<i>Ptoleria buxtoni</i> sp. n. . . .		×	×			
<i>Myndus roggewei</i> Muir	×	×	×	×		
<i>Myndus semibrunneus</i> sp. n. . .		×				
<i>Myndus sordidus</i> sp. n. . . .	×					
<i>Myndus seminiger</i> sp. n. . . .	×					
<i>Otharus dumonti</i> Muir	×		×			
DELPHACIDAE						
<i>Ugyops samoensis</i> Muir	×	×				Niue.
<i>Ugyops kellersi</i> Muir.	×	×	×	×		
<i>Ugyops bougainvillei</i> Muir . . .	×	×	×			
<i>Ugyops brevipennis</i> Muir	×	×	×	×		
<i>Ugyops wilkesi</i> sp. n.	×		×			
<i>Ugyops rufus</i> sp. n.	×	×				
<i>Ugyops bryani</i> sp. n.	×					
<i>Megamelus proserpina</i> Kirk. . .	×	×	×		×	Widely distributed in Pacific.
<i>Peregrinus maidis</i> (Ashm.) . . .		×			×	" " " Tropics.
<i>Phyllodinus koebelei</i> (Kirk.) . .	×		×		×	" " " Pacific.
<i>Sardia pluto</i> (Kirk.)			×		×	Australia, Philippines, Formosa.
<i>Perkinsiella vitiensis</i> Kirk. . .		×	×	×	×	Niue.
<i>Sogata kirkaldyi</i> (Muir)		×	×		×	Widely distributed in Pacific.
<i>Sogata paludum</i> (Kirk.)		×	×			" " " "
<i>Sogata eupompe</i> (Kirk.)		×	×		×	Australia.
<i>Sogata ochrias</i> (Kirk.)		×	×		×	"
<i>Delphacodes dryope</i> (Kirk.) . . .		×			×	"
<i>Delphacodes matanitu</i> (Kirk.) . .			×		×	
<i>Dicranotropis cognata</i> Muir . . .			×		×	Queensland, Philippines.
TROPIDUCHIDAE						
<i>Vanua poyeri</i> Muir		×	×			
<i>Vanua stevensoni</i> sp. n.		×				
<i>Vanua hopkinsi</i> sp. n.		×				
MEENOPLIDAE						
<i>Nisia atrovirens</i> (Leth)		×	×		×	Widely distributed.
<i>Nisia langleyi</i> (Muir)		×	×			

	SAVAI.	UPOLU.	TUTUILA.	MANUA GROUP.	FUJI ISLANDS.	OTHER LOCALITIES.
<i>Suva upolensis</i> sp. n. . .		×				
<i>Suva albipennis</i> sp. n. . .	×	×				
ACHILIDAE						
<i>Eurynomus niger</i> Muir . .			×			
<i>Eurynomus granulatus</i> Muir . .	×		×	×		
<i>Cythna fusca</i> sp. n. . .		×				
DERBIDAE						
<i>Lamenia caliginea</i> . . .	×	×	×	×		Tahiti, Ellice Is., Niue.
<i>Phaciocephalus tutuilae</i> Muir . .		×	×	×		
<i>Pyrrhoneura saccharicida</i> Kirk. .	×	×		×	×	Tonga.
<i>Pyrrhoneura samoensis</i> sp. n. . .		×		×		
<i>Swezeyia lyricea</i> Kirk. . .	×	×	×		×	
<i>Levu rufulus</i> sp. n. . .	×	×				
<i>Levu samoensis</i> sp. n. . .	×	×	×			
ISSIDAE						
<i>Neolollius viridis</i> Muir . . .			×			
<i>Capelopterum maculifrons</i> Muir .	×	×	×			
LOPHOPIDAE						
<i>Buxtoniella hopkinsi</i> g. et sp. n.		×				
<i>Buxtoniella bryani</i> sp. n. . .	×					
RICANIIDAE						
<i>Plestia kellersi</i> Muir . . .	×	×	×			
<i>Plestia anomala</i> Muir . . .	×	×	×			

CIXIIDAE

Andes Stål

1. *Andes lamoni* (Muir). Fig. 1.

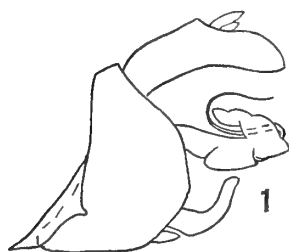
Leirioëssa lamoni Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 567. 1921.

Savaii : Safune, seven specimens, 12.v.1924 (Bryan).

Tutuila : Pago Pago, two specimens ; Afono Trail, one specimen, ix.1923 (Swezey and Wilder).

Upolu : Apia, one specimen ; Vaea, two specimens ; Malololelei, one specimen, vi.1924 ; ii., iii.1925.

The amount of variation in colour is great, ranging from a nearly immaculate pale tegmen to the dark, banded type. Most species of this genus have a great range of colour variation.



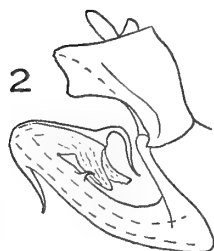
TEXT-FIG. 1.—*Andes lamononi* (Muir), male genitalia, lateral view.

This species was previously known to occur in Tutuila. It is very closely allied to *A. tortricomorpha* (Kirk.) and *A. vitiensis* (Kirk.), and all three may possibly be the same species.

Ptoleria Stål

2. *Ptoleria baumanensis* (Muir). Fig. 2.

Austroloma baumanensis Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 568, f. 7, 7a. 1921.



TEXT-FIG. 2.—*Ptoleria baumanensis* Muir, sp. n., aedeagus and anal segment, lateral view.

Upolu : Malololelei, twelve specimens ; Vailima, five specimens ; Mt. Vaea, one specimen ; Apia, two specimens. (At all times of the year.)

Tutuila : Pago Pago, twenty specimens ; Afono Trail, six specimens ; Fagasa, four specimens, ix.1923 (Swezey and Wilder).

Savaii : Salailua, two specimens, v.1924 (Bryan).

Previously described from a specimen from Tutuila. There is considerable variation in colour. The Upolu specimens have the pattern more distinct than the others ; those from Savaii are the darkest, and those from Tutuila the lightest.

3. *Ptoleria wilkesi* (Muir)

Austroloma wilkesi Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 568, f. 16. 1921.

Tutuila : Pago Pago, eighteen specimens ; Afono Trail, three female specimens, ix.1925 (Swezey and Wilder).

Savaii : Salailua, one female (Bryan), 21.v.1924.

Previously known to occur in Tutuila.

4. *Ptoleria buxtoni* sp. n. Fig. 3.

Male ; length 2.3 mm. ; tegmen 3.7 mm.

Lateral margins of pygofer subangularly produced in middle ; genital

styles in lateral view angular in middle, basal half narrow, parallel sided, apical half gradually widening to apex which is slightly oblique; anal segment and aedeagus figured. Light brown, darker over mesonotum. Tegmina hyaline, slightly brownish, veins slightly darker, granules numerous, small, bearing light hairs. Wings hyaline, slightly fuscous, veins dark.

Female similar to male but slightly larger.

Upolu: Apia, six specimens, ii., iii., xii.1924; Malololelei, six specimens, vi.1924; Vailima, three specimens, vi., x.1924.

Tutuila: Pago Pago, six specimens, ix.1923 (Swezey and Wilder).

The Tutuila specimens are much lighter in colour and there is a slight difference in the male genitalia, the spine on the right side of aedeagus being curved and recurved, and the periandrium not so swollen in the middle.



TEXT-FIG 3.—
Ptoleia buxtoni Muir,
sp. n., aedeagus and anal
segment, lateral
view.

Myndus Stål

5. *Myndus roggewei* Muir

Myndus roggewei Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 566, f. 6. 1921.

Tutuila: Pago Pago, eleven specimens; Fagasa, one specimen; Afono Trail, ix.1923, one specimen; (Swezey and Wilder); some taken on *Cyrtandra* sp.

Manua: Tau, ten specimens, ix.1923 (Swezey).

Savaii: Salailua, one female, 20.v.1924. (Bryan).

Upolu: Malololelei, six specimens, ii., vi.1924; xii.1925.

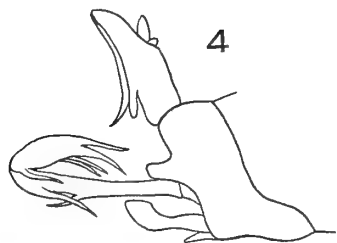
Previously known from seven specimens from Tutuila. This species is very close to *Myndus vitiensis* Kirk., of Fiji, which is only known from two females.

6. *Myndus semibrunneus* sp. n. Fig. 4.

Male; length 2.3 mm.; tegmen 2.6 mm.

Light brown, darker over carinae of frons, legs lighter. Tegmina hyaline, basal portion to cross veins brown, clear hyaline beyond, veins same colour as

membrane. Wings hyaline, basal half light fuscous brown, apical half clear hyaline, veins dark brown. Pygofer with the right lateral margin produced into a small quadrate process; anal segment with two small processes, the one on the right side of lateral margin shorter and with rounded apex, the one on the left side longer and acute at apex.



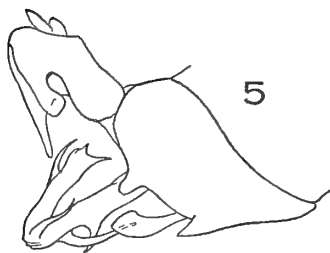
TEXT-FIG. 4.—*Myndus semibrunneus* Muir, sp. n., male genitalia, lateral view.

Female similar to male but slightly larger.

Upolu: Vaea, 1100 feet elevation, two specimens, 25.iv.1924 (Bryan).

7. *Myndus sordidus* sp. n. Fig. 5.

Male; length 2.5 mm.; tegmen 3 mm.



TEXT-FIG. 5.—*Myndus sordidus* Muir, sp. n., male genitalia, lateral view.

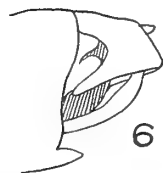
Light brown, darker on frons and mesonotum between carinae, legs lighter. Tegmina hyaline, clear, apical cells slightly fuscous, veins slightly yellowish, granules minute, fairly numerous. Wings hyaline with brown veins. Female similar to male but slightly larger.

Genitalia figured; anal segment asymmetrical.

Savaii: Salailua, two specimens, 19.v.1924 (Bryan).

8. *Myndus seminiger* sp. n. Fig. 6.

Male; length 2.3 mm.; tegmen 2.8 mm.



TEXT-FIG. 6.—*Myndus seminiger* Muir, sp. n., male genitalia, lateral view.

Width of vertex at base subequal to length in middle, base wider than apex, narrowest in middle, the basal part of frons distinct in dorsal view. Sc + R fork about one-third from base, more basad than Cu fork, M arising from Sc + R near base. In lateral view the apex of anal segment on each side produced into a flat process with narrowly rounded apex pointing basad, the one on right a little shorter and blunter than the one on left. Lateral margins of pygofer straight, entire. Genital styles thin, slightly curved, apex rounded. Black or deep reddish-brown, apical half of clypeus, labium, legs, anal segment and genital styles white or light yellow. Basal portion of tegmen to nodal line black

or dark reddish-brown, apical portion clear hyaline. Basal portion of wings fuscous, apical portion hyaline.

Female similar to the male.

Savaii : Described from one male and one female from Savaii, 1000 feet elevation, 21.xi.1925.

Oliarus Stål

9. *Oliarus dumonti* (Muir)

Urvillea dumonti Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 569. 1921.

Savaii : Safune, one male specimen, 2.v.1924, taken in rain forest 2000–4000 feet elevation (Bryan). Previously known from one male taken in Tutuila.

DELPHACIDAE

Ugyops Guérin

This genus has a wide distribution in the tropics of the Australian, Malay and Oriental regions, and into the Indian ocean. It is closely allied to *Canyra*, of tropical America, and is the only genus of the Delphacidae which has produced several endemic species in the Samoan group.

10. *Ugyops samoensis* Muir

Ugyops samoensis Muir, 1921. *Proc. Haw. Ent. Soc.*, IV, 3, p. 573, fig. 10.

Tutuila : Pago Pago, three specimens ; Amauli, two specimens, ix.1923 (Swezey and Wilder) ; Pago Pago, one specimen, xii.1925.

Upolu : Lalomanu, one specimen, xi.1924 ; Apia, seven specimens, iii., iv., v., ix., xi.

This species was previously known as occurring in Tutuila and Niue (Savage Island).

11. *Ugyops kellersi* Muir

Ugyops kellersi Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 572, fig. 12a. 1921.

A long series from various localities. The specimens show considerable variation in colour, those from Savaii being darker and those from Tutuila lighter.

Savaii : Safune, from low land to four thousand feet elevation, twenty specimens, v.1924 (Bryan).

Tutuila : Amauli, twelve specimens off *Cyrtandra* sp. ; Fagasa, nine specimens ; Afono Trail, two specimens ; Pago Pago, two specimens, ix.1923 (Swezey and Wilder) ; Pago Pago, five specimens, xii.1925 (Buxton).

Manua : Tau, four specimens, ix.1923 (Swezey).

Upolu : Leulomoega, three specimens ; Tuaeufu, two specimens ; Apia, two specimens, ix.1923 (Swezey and Wilder) ; Lalomanu, Aleipata, two specimens, xi.1924 ; Apia, nine specimens, ii. and iii.1924 ; i., iii., iv.1925 ; Malololelei, three specimens, iii., iv., xi.1924.

Previously only known to occur in Tutuila.

12. *Ugyops bougainvillei* Muir

Ugyops bougainvillei Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 574, f. 9. 1921.

Upolu : Vailima, one specimen, xii.1925 ; Malololelei, seven specimens, v., vi., xi., xii.

Savaii : Safune, one male and two females ; Salailua, one male. One of the males is dark and typically marked ; the other three specimens are uniformly stramineous, with only a slight indication of markings on the female. The male genitalia are similar to those of the Tutuila specimens.

Previously only known from Tutuila.

13. *Ugyops brevipennis* Muir

Ugyops brevipennis Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 575, fig. 11. 1921.

Savaii : Safune, 1000-4000 feet elevation, eight specimens, v.1924 (Bryan).

Tutuila : Afono Trail, one specimen ; Leone Road, one specimen ; Amauli, one specimen ; Pago Pago, two specimens, ix.1923 (Swezey and Wilder).

Upolu : Vaea, one specimen ; Tuaeufu, two specimens (Swezey and Wilder) ; Aleipata, one specimen ; Lalomanu, one specimen.

Manua : Tau, one specimen (Swezey).

There is some difference in colour, the three specimens from Vaea and Tuaeufu having the pronotum and mesonotum as well as the lighter portions of the tegmina much lighter and more uniform. Previously only known to exist in Tutuila.

14. *Ugyops wilkesi* sp. n. Figs. 7, 8.

Male ; length 4 mm. ; tegmen 3.8 mm.

Vertex longer than wide, the medio-lateral carinae continued on to the frons separately, the V carina obscure. The frons with two median carinae

separate to apex, at base near together then gradually separating. Fork of Sc + R slightly basad of Cu fork. Ventral view of male genitalia figured; lateral margins of pygofer produced into a thin process; medio ventral margin produced into a single, rounded process. Light brown; the carinae of head darker brown, crimson between the median carinae of frons. Tegmina and wings hyaline, very slightly tinged with brown, veins darker brown.

Female; length 4 mm.; tegmen 4.5 mm. Similar to the male in build and colour except a little darker, especially on nota; the abdominal terga and sterna also darker brown.

Tutuila: Leone Road, one male and one female, ix.1923 (Swezey and Wilder).

Savaii: Salailua, one female, v.1924 (Bryan). The Savaii specimen is darker than those from Tutuila.



TEXT-FIG. 7.—*Ugyops wilkesi* Muir, sp. n., head, dorsal view.

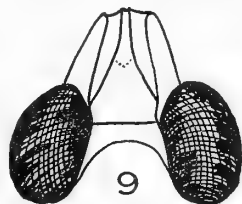


TEXT-FIG. 8.—*Ugyops wilkesi* Muir, sp. n., male genitalia, ventral view.

15. *Ugyops rufus* sp. n. Fig. 9.

Female; length 5.6 mm.; tegmen 3.8 mm.

Brachypterous; tegmina reaching to about apex of ninth abdominal segment, wings nearly as long as tegmina. Vertex projecting well in front of eyes, medio-lateral carinae continuing on to the frons separately, a very slight V carina, base of vertex straight. Frons much longer than wide, gradually widening from base to near apex then slightly narrowing, two median carinae separate to the apex. Rufous; legs and apical portion of abdomen brownish. Tegmina rufous, the base, the basal margin of costal cell, the cell between second claval and commissure, and the apical Cu and M cell from the cross veins to apex, but not the margins, shiny black.



TEXT-FIG. 9.—*Ugyops rufus* Muir, sp. n., head, dorsal view.

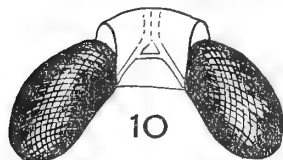
Upolu : Malololelei, 2000 feet elevation, one female, vi.1924.

Savaii : Safune, 2000-4000 feet elevation, one female, v.1924 (Bryan).

16. *Ugyops bryani* sp. n. Fig. 10.

Female ; length 5.5 mm. ; tegmen 4.6 mm.

Length of vertex subequal to width, carinae fairly distinct on basal half, obscure on apical half, two very obscure carinae on middle of frons continuing to apex separately. Vertex and frons reddish-brown, genae and clypeus lighter ; pronotum and mesonotum reddish-yellow, the latter redder than the former ; antennae, legs and abdomen reddish-brown. Tegmina reddish yellow, veins slightly darker, slightly fuscous across middle from apex of clavus to costa, continuing along R and M to near apex.



TEXT-FIG. 10.—*Ugyops bryani* Muir, sp. n., head, dorsal view.

Savaii : Safune, 2000-4000 feet elevation, v.1924 (Bryan).

Megamelus Fieber

17. *Megamelus proserpina* Kirk.

Megamelus proserpina Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, III, p. 147. 1907.

Savaii : Safune, 1000-2000 feet elevation, a long series of young and adults, v.1924 (Bryan).

Tutuila : Leone Road, a long series of both sexes ; Pago Pago, two specimens, ix.1923 (Swezey and Wilder).

Upolu : Apia, twelve specimens, vii.1924 ; Malololelei, one specimen, iv.1925.

This is a common species on taro (*Colocasia esculenta* ; Araceae). Previously known to occur in Fiji, Savage Island (Niue), Queensland, Amboina, Java and Philippines.

Peregrinus Kirkaldy

18. *Peregrinus maidis* (Ashmead)

Delphax maidis, Ashmead, *Psyche*, V, p. 323. 1890.

Upolu : One male specimen from Apia, iii.1924.

This species is known as the "corn hopper" and is cosmopolitan, also extending beyond the tropics into South Africa, North America and Australia.

Phyllodinus Van Duzee

19. *Phyllodinus koebelei* (Kirk.)

Phacalastor koebelei Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, I, p. 408. 1906.

Savaii: Safune, two specimens, v.1924 (Bryan). There are also three specimens from Vila, Efate Is., New Hebrides, June 1925.

This species would be placed in *Dicranotropis*, but has flattened and very slightly expanded front legs, so that it is best regarded as a *Phyllodinus*. This may necessitate a new specific name, since *koebelei* Osborn has priority, but for the present it is best to let it stand as it is.

Previously known to be found in Fiji, Queensland, New Guinea, Ceram, Borneo and Philippines.

Sardia Melichar

20. *Sardia pluto* (Kirkaldy)

Hadeodelphax pluto Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, I, p. 410. 1906.

Upolu: Apia, forty specimens, ix.1923 (Swezey and Wilder); and two specimens iii. and xi. (Buxton and Hopkins).

Tutuila: Pago Pago, twelve specimens, ix.1923 (Swezey and Wilder).

Previously known to exist in Australia, Fiji, Philippines, Formosa and Tutuila.

Perkinsiella Kirk.

21. *Perkinsiella vitiensis* Kirk.

Perkinsiella vitiensis Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, I, (9), p. 406. 1906.

Tutuila: Amauli, twelve specimens; Fagasa, one specimen; Afono Trail, seventeen specimens, ix.1923 (Swezey and Wilder); Leone Road, two specimens, ii.1924 (Bryan).

Upolu: Apia, six specimens, ix.1923 (Swezey and Wilder).

Manua, Tau: seventeen specimens, ix. (Swezey).

Attached to sugar cane. Previously known as occurring in Fiji and Niue.

Sogata Distant

22. *Sogata kirkaldyi* (Muir)

Kelisia kirkaldyi Muir, *Proc. Haw. Ent. Soc.*, III, 4, p. 329. 1917.

Tutuila : Pago Pago, forty specimens, ix.1923 (Swezey and Wilder), on *Sporobolus* sp.

Upolu : Apia, thirty-four specimens, ix.1923 (Swezey and Wilder), on *Sporobolus* sp.

Formerly met with in Fiji, Queensland, Philippines, and Formosa. It is closely related to *Sogata paludum* (Kirk.).

23. *Sogata paludum* (Kirk.)

Kelisia paludum Kirkaldy, *Fauna Hawaiiensis*, II, (7), p. 579. 1910.

Tutuila : Pago Pago, nine specimens ; Amauli, one specimen, ix.1923 (Swezey and Wilder).

Upolu : Apia, two specimens, ix.1923 (Swezey and Wilder).

This species is widely distributed in the Pacific, and has been taken in Jamaica. The Samoan specimens are darker than those found in Hawaiiia.

24. *Sogata eupompe* (Kirk.)

"*Delphax*" *eupompe* Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, III, p. 162. 1907.

Tutuila : Pago Pago, a long series of adults and young ; Amauli, a long series, ix.1924 (Swezey and Wilder).

Upolu : Apia, sixteen specimens, ix.1924 (Swezey and Wilder).

Previously known to occur in Queensland and Fiji.

25. *Sogata ochrias* (Kirkaldy)

"*Delphax*" *ochrias* Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, III, p. 157. 1907.

Tutuila : Pago Pago, thirty-five specimens of adults and young, ix., x. 1923 (Swezey and Wilder).

Upolu : Apia, two specimens on *Sporobolus* sp. ix.1923 (Swezey and Wilder).

Previously known to be found in Fiji and Australia.

Delphacodes Fieber

26. *Delphacodes dryope* (Kirk.)

"*Delphax*" *dryope* Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, III, p. 154. 1907.

Upolu : Apia, a long series of young and adults on *Sporobolus* sp. and Bermuda grass, ix.1923 (Swezey and Wilder).

Previously known to exist in Queensland and Fiji.

27. *Delphacodes matanitu* (Kirk.)

"*Delphax*" *matanitu* Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, III, p. 155. 1907.

Tutuila : Pago Pago, two brachypterous specimens, ix.1923 (Swezey and Wilder).

Previously known as occurring in Fiji, Queensland and New Guinea. It is exceedingly closely allied to *Delphacodes nigripennis* (Crawford), of Nicaragua and Jamaica.

Dicranotropis Fieber

28. *Dicranotropis cognata* Muir

Dicranotropis cognata Muir, *Proc. Haw. Ent. Soc.*, III, 4, p. 317, pl. VI, figs. 34, 34a, 1917; IV, 3, p. 575. 1921.

Tutuila : Pago Pago, four specimens, iv.1918 (Kellers). Also found in Queensland, Fiji, and Philippine Islands.

TROPIDUCHIDAE

Only one genus of this family has been found in Samoa.

Vanua Kirkaldy

Vanua Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, I, p. 413. 1906.

This genus was erected by Kirkaldy in 1906 for *Vanua vitiensis*, of Fiji; in 1907 Distant described the Australian *Ficarasa straminea*, which Melichar placed in *Vanua*; in 1921 Muir described *Vanua poyeri*, from specimens from Tutuila, and *Vanua angusta*, from material from Niue (Savage Island). The

specimens under consideration include representatives of three more species ; *V. stevensoni* and *V. hopkinsi*, of Samoa, and another new species found in Tonga. So far as present knowledge goes, this appears to be a South Pacific genus straying into Australia. The male genitalia are peculiar in having the genital styles amalgamated into a single asymmetrical structure with a process on the left side, and in having the anal segment fastened to the pygofer so that it possesses little or no movement.

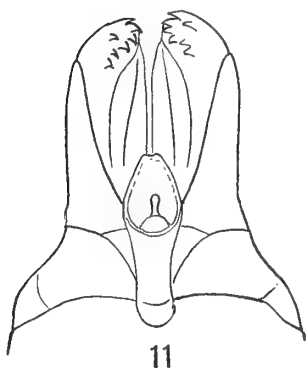
29. *Vanua poyeri* Muir. Fig. 11.

Vanua poyeri Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 579. 1921 ; Muir, *t.c.* V. 2, p. 238, f. 20. 1923.

Tutuila : one female Fagasa, 9.ix.1923 ; one female Pago Pago, 30.ix.1923 (Swezey and Wilder) ; one male Afono Trail, 25.ix.1923 (Swezey).

Upolu : Three males and two females from Malololelei, 2000 feet elevation vi., vii., ix.1924. The dorsal view of the female genitalia is figured from a paratype.

Previously known to occur in Tutuila.



TEXT-FIG. 11.—*Vanua poyeri*
Muir, female genitalia,
dorsal view.

30. *Vanua stevensoni* sp. n.

Male ; length 5.3 mm. ; tegmen 7 mm.

In build similar to *V. poyeri* but smaller. The left anal angle of pygofer is rounded and curved inward, the right angle is slightly produced and curved inward ; the anal segment on the right with the under side near middle produced into an angular projection. Light green, turning to stramineous in older cabinet specimens ; carinae of vertex slightly tinged with red. Tegmina hyaline, veins green, commissure from angle to apex of clavus black ; second claval vein red extending to hind margin beyond clavus. Wings hyaline with stramineous veins.

Upolu : Described from two male specimens, one from Vailima, 19. x.1925, and one from Malololelei, 2000 feet elevation, 23.xi.1924 (Buxton and Hopkins).

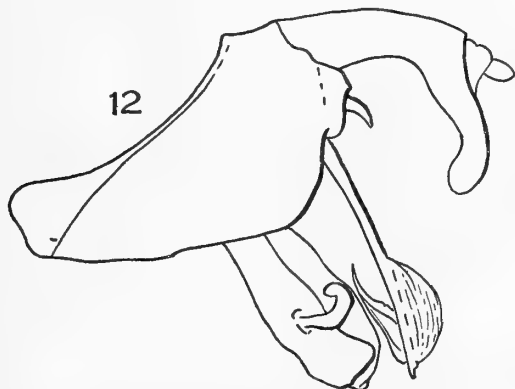
There is one damaged female from Malololelei, which has the dark mark along the commissure ; the insect appears to belong to this species, but since it is without a head I do not include it in the type material : in this specimen

the anal segment is subacute at the apex, and the arrangement of the apical spines of the styles is distinct.

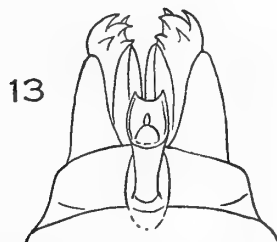
31. *Vanua hopkinsi* sp. n. Figs. 12, 13.

Male; length 7.2 mm.; tegmen 8.4 mm.

Width of vertex slightly greater than length from middle of apex to lateral basal angles. In build typical of genus. Left anal angle of pygofer subquadrately produced and turned inward, right side produced into a small,



TEXT-FIG. 12.—*Vanua hopkinsi* Muir, sp. n., male genitalia, lateral view.



TEXT-FIG. 13.—*Vanua hopkinsi* Muir, sp. n., female genitalia, dorsal view.

slender, finger-like process which is curved inward; anal segment at anus curved downward with the apex rounded; aedeagus slender, apex of perianthium membranous on dorsal aspect where it can be inflated to some extent; penis small, spinelike. Green, in some specimens, stramineous. Tegmina clear hyaline, veins light green; in some specimens there is a distinct light mark along the first claval vein. Wings clear hyaline, veins light green.

Female slightly larger than male, but otherwise similar. The female genitalia are shorter than in *V. poyeri*, and the apex of the anal segment is emarginate.

Upolu: four males and four females from Malololelei, 2000 feet elevation, vi., vii., xi.1924; iv.1925.

Another new species of this genus is known to the writer from specimens from Tonga (Hopkins).

MEENOPLIDAE

The most characteristic feature of this family is the shape of the abdominal tergites, especially the sixth, seventh and eighth. These are shaped like an

inverted V, decrease in size posteriorly, and lie one against the other or even telescope into one another ; the greater part of the surface of the sixth, seventh and eighth, especially in the female, bears wax glands and, in the female, long wax filaments. The general facies, the granulated clavus and Sc + R, and, in many species, the median ocellus, all distinguish this family from others. In view of the fact that the species, as well as the genera, are all closely related one to another, the study of the male genitalia is essential to the correct understanding of the species and, perhaps, of the genera also.

Nisia Melichar

32. *Nisia atrovonosa* (Lethierry)

Upolu : Apia, three specimens, 28.v.1925 (Buxton and Hopkins) ; one specimen, 13.ix.23 (Swezey and Wilder).

Tutuila : Pago Pago, two specimens, 20.ix.1923 (Swezey and Wilder).

As identified at present, this species has a wide distribution in Indo-Malaya, Africa and Australia.

33. *Nisia langlei* (Muir)

Meenoplus langlei Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 570, figs. 3, 3a. 1921.

A long series from various localities.

Tutuila : Amauli, fifty-nine specimens, from *Cyrtandra*, 6.ix.1923 ; Pago Pago, ten specimens, 9 and 30.ix.1923 ; Fagasa, one specimen, 9.ix.1923 (Swezey and Wilder).

Upolu : Malololelei, one specimen, 20.vi.24 (J. S. Armstrong).

Previously known to be found in Tutuila.

Suva Kirkaldy

34. *Suva upolensis* sp. n. Figs. 14, 15.

Male ; length 2 mm. ; tegmen 3.3 mm.

In build and colour similar to *Suva koebelei* Kirk. At base of vertex two small acute triangles, which by some are considered to represent the vertex ; no median carina on vertex or frons. First claval vein heavily granulate, Sc + R without granules. Median ocellus present but obscure.

The genitalia figured ; they differ considerably from those of *S. koebelei*.

Light yellow, heavily covered with white, powdery, waxy secretion, eyes

black. Tegmina hyaline, slightly opalescent and slightly opaque with waxy secretion; a dark mark runs from apex of R over R to cross veins, then over



TEXT-FIG. 14.—*Suva upolensis* Muir, sp. n., male genitalia, lateral view.



TEXT-FIG. 15.—*Suva upolensis* Muir, sp. n., male genitalia, ventral view.

basal portion of M. to base; veins light yellow. Wings hyaline with slightly fuscous veins, white with very waxy secretion.

Female; similar to male but slightly larger.

Upolu: Vailima, two males; Malololelei two females, 15.iv., 8.vi.1924.

In colour and build this species is very like *S. koebelei*, but there are differences in the genitalia.

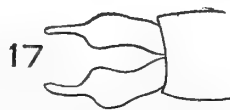
35. *Suva albipennis* sp. n. Figs. 16, 17.

Male; length 2 mm.; tegmen 3.6 mm.

The lateral carinae on the clypeus are somewhat obscure but can be made out if the specimen is held at a certain angle. First claval vein and Sc + R granulate. The genitalia are figured. They closely resemble those of *S. koebelei*,



TEXT-FIG. 16.—*Suva albipennis* Muir, sp. n., male genitalia, lateral view.



TEXT-FIG. 17.—*Suva albipennis* Muir, sp. n., male genitalia, ventral view.

of Fiji, but are distinct; they are also easily distinguished from those of *S. upolensis*, *Nisia langlei* and *N. atrovenosa*. Light yellow; tegmina and wings hyaline with yellow veins, all covered with a white, powdery, waxy secretion. The apical cells of the tegmina are slightly tinged with yellow.

The female is similar to the male, but slightly larger. The wax-secreting areas on the eighth abdominal tergites are large.

Upolu: Malololelei, twenty-two specimens, ii., iv., vi., xi., xii. (Buxton

and Hopkins) ; one specimen, vi.1924 (J. S. Armstrong) ; Apia, one specimen, 20.ii.1925.

Savaii : Salailua, eight specimens, v.1924 (Bryan).

ACHILIDAE

This family needs thorough revision ; nothing has been done to bring the genera together in a broad way since Stål's work was published in 1866. Distant, Kirkaldy and others have tabulated the genera of restricted areas, but have not compared them with those found elsewhere.

The genera *Eurynomeus* and *Cythna* are closely allied, and *E. granulatus* is somewhat intermediate, so that it is possible that they will have to be combined. In *Cythna*, the areolets at the apex of the vertex are visible in dorsal view, whereas in *Eurynomeus* they are more frontal and not visible.

Eurynomeus Kirk.

36. *Eurynomeus niger* Muir

Eurynomeus niger Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 572. 1921.

Tutuila : One female specimen from Afono Trail, 25.ix.1923 (Swezey and Wilder).

Previously met with in Tutuila.

37. *Eurynomeus granulatus* Muir

Eurynomeus granulatus Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 571, fig. 1, a-d. 1921.

Savaii : Safune, two specimens, 2.v.1924 (Bryan).

Tutuila : Pago Pago, one specimen, 30.ix.1925 (Swezey and Wilder).

Manua : Tau, one specimen, 27.ix.1923 (Swezey).

Previously found in Tutuila.

Cythna Kirk.

38. *Cythna fusca* sp. n.

Female ; length 2.7 mm. ; tegmen 3.3 mm.

Dark shiny fuscous brown, slightly lighter between lateral carinae of mesonotum ; apical half of frons, the clypeus, labium and coxae yellow or light brown. Tegmina dark shiny brown uniform with thorax.

Upolu : described from two females from Malololelei, 10.iii.1924 (Buxton and Hopkins).

DERBIDAE

Lamenia Stål

39. *Lamenia caliginea* Stål

Delphax caliginea Stål, *Öfv. K. Vet. Ak. Förh.*, p. 246. 1854.

Lamenia caliginea Stål, *Eugenies Resa, Zool.*, p. 277, Pl. IV, f. 5. 1859.

Tutuila : Pago Pago, thirteen specimens ; Leone Road, twenty specimens ; Afono Trail, eight specimens ; Amauli, three specimens ; Fagasa, three specimens, ix.1923 (Swezey and Wilder).

Savaii : Safune, seven specimens, v.1924 (Bryan).

Manua : Tau, eleven specimens, ix.1923 (Swezey and Wilder).

Upolu : Leulumoega, seven specimens ; Apia, one specimen ; Tuaeafa, one specimen, ix.1923 (Swezey and Wilder) ; Vailima, one specimen ; Aleipata, two specimens ; Apia, three specimens, iii., iv., v., vi.

Ellice Islands : Nui, three female specimens which agree with Samoan examples, iii.1925 (Buxton).

Tonga : Neiafu, Vavau Group, one male and one female, ii.1924 (Hopkins).

This species was originally described from specimens from Tahiti, and was later reported from Tutuila and Niue (Savage Island).

Phaciocephalus Kirkaldy

40. *Phaciocephalus tutuilae* Muir

Phaciocephalus tutuilae Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 576. 1921.

Upolu : Apia, three specimens ; Malololelei, three specimens ; Vailima, one specimen, ii., iii., iv., vi., viii.1924.

Tutuila : Pago Pago, thirty-two specimens ; Leone Road, three specimens ; Amauli, three specimens, ix.1923 (Swezey and Wilder).

Savaii : Safune, one specimen ; Salailua, one specimen, v.1924 (Bryan).

Manua : Tau, twelve specimens, ix.1923 (Swezey and Wilder).

This species is closely allied to *P. vitiensis*. Previously only known to occur in Tutuila, where it is evidently common.

Pyrrhoneura Kirkaldy

41. *Pyrrhoneura saccharicida* Kirkaldy

Pyrrhoneura saccharicida Kirkaldy, *Hawaiian Sugar Planters' Association Ent. Bull.*, I, 9, p. 435, 1906; *op. c. Bull.* III, p. 170, f. 4. 1907.

Savaii: Safune, three specimens; Salailua, one specimen, v.1924 (Bryan). Fagamalo, one specimen, ix.1925.

Upolu: Apia, five specimens, ix.1923 (Swezey and Wilder); eleven specimens, i., iii., iv., v., vii., viii., xii.1924 (Buxton and Hopkins); Aleipata, Lalomanu, two specimens, xi.1924.

Manua: Tau, ten specimens, ix.1923 (Swezey).

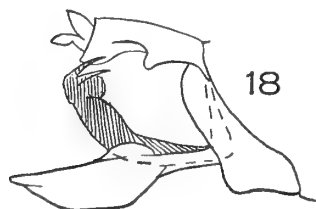
Tonga: Neiafu, Vavau, one specimen, iii.1925 (Hopkins).

Previously found in Fiji.

42. *Pyrrhoneura samoensis* sp. n. Fig. 18.

Male: length 2.6 mm.; tegmen 4 mm.

Shoulder keel very small; antennae much longer than head, reaching nearly to apex of head. Genitalia figured.



TEXT-FIG. 18.—*Pyrrhoneura samoensis* Muir, sp. n., male genitalia, lateral view.

Stramineous, slightly fuscous on the abdomen, much powdered waxy secretion over the head and thorax.

Tegmina fuscous, pale hyaline over base, most of clavus on to fork of Cu, basal half of C cell, a small spot about the position of stigma and another at apex of Ms 3, veins reddish, darker at cross veins between Ms 3 to 5, the whole tegmen covered with white waxy powder. Wings light fuscous with darker veins.

Upolu: Malololelei, four male specimens.

This species can be distinguished from *P. saccharicida* by its lighter colour, and by its genitalia, especially the anal segment.

Swezeyia Kirkaldy

Swezeyia Kirk., *Hawaiian Sugar Planters' Association Ent. Bull.*, I. (9), p. 430, males. 1906.

Phantasmotocera Kirk., *t. c.* p. 430, 1906, females.

Nesophantasma Kirk., *op. c.* III, p. 177. 1907.

When describing *Phantasmatocera fuscofasciata*, the writer pointed out that the male possessed a head similar to that of *Swezeyia laratica*, and the female a head resembling that of *P. vitiensis*. Now that we have evidence that *S. lyricen* Kirk. is the male of *P. vitiensis* Kirk., there is no necessity to try to keep the two genera apart. *Nesophantasma* has no characters by which it can be separated from *Swezeyia*.

43. *Swezeyia lyricen* Kirk.

Swezeyia lyricen Kirk., t. c. Pl. XXX, f. 10. 1906.

Phantasmatocera vitiensis Kirk., t. c. p. 431, Pl. XXVIII, figs. 1-3. 1906.

There is a long series of males which are *S. lyricen*, and a similar series of females which are *P. vitiensis*. Since we know that there are great sexual differences in the head of allied species, we must conclude that these are the sexes of the same species.

Savaii: Safune, twenty-five males and twenty-three females, v.1924 (Bryan); Tuasivi, one specimen, ii.1924.

Tutuila: Pago Pago, six males and seven females; Leone Road, two females; Amauli, two males, ix.1923 (Swezey and Wilder).

Upolu: Apia, two females, ix.1923 (Swezey and Wilder); one male, four females, ii., iv., viii.1924. Malololelei, one male and one female; Vailima, one female, ii.1925.

Previously met with in Fiji.

Levu Kirkaldy

44. *Levu rufulus* sp. n.

Female: length 2.3 mm.; tegmen 4 mm.

Shoulder keels well developed.

Stramineous: slightly reddish on dorsum. Tegmina hyaline, uniformly reddish fuscous, veins slightly darker. Hind margin of pregenital plate angularly produced from sides to middle.

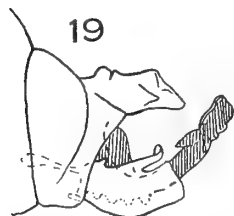
The lateral carinae of frons meet together from base to beyond middle, thus placing the present species in the genus *Levu*; otherwise it is very similar to *Decora haematoneura* (Kirkaldy), placed by Kirkaldy in *Rhotana* Walker, but as the shoulder keels are well developed, and the lateral carinae of frons do not meet together, we have to consider it as a *Decora*.

45. *Levu samoensis* sp. n. Fig. 19.

Male : length 1.5 mm. ; tegmen 3.4 mm.

The lateral carinae of vertex and frons touching one another from near base of vertex to near apex of frons ; shoulder keel large, well defined.

Stramineous : tegmina hyaline, slightly shiny, veins mostly white, apical cross veins and the main veins near them fuscous extending into membrane, fuscous over apical portion of cubitus, fuscous from middle of costa to apex of clavus, the fork at the apex of Sc and M darker than the rest, making two small Vs. The amount of infuscation varies considerably, being in some specimens practically absent, in others quite distinct. Wings hyaline, white, veins white.



TEXT-FIG. 19. — *Levu samoensis* Muir, sp. n., male genitalia, lateral view.

The genitalia figured ; there is a short pointed projection on each side of the anal segment. There are no signs of a distinct basal plate or of any basal plate apodeme. The ejaculatory duct is large as it passes out of the basal foramen of the aedeagus, thus forming a chamber.

Female : length 2.4 mm. ; tegmen 4.6 mm.

The fuscous marking on veins and membrane more distinct than in the male. One female from Upolu is fuscous all over the tegmina with fuscous veins.

Savaii : Safune, fifteen specimens, v.1924 (Bryan).

Upolu : Apia, one specimen, iii.1924 ; Vailima, two specimens, ii., iii.1925 ; Malololelei, five specimens, iv., xi., xii.

Tutuila : Afono Trail, one specimen ; Amauli, one specimen, ix.1923 (Swezey and Wilder).

ISSIDAE

Neolollius Muir

Neolollius Muir, *Proc. Haw. Ent. Soc.*, IV, No. 3, p. 584. 1921.

So far this genus is only known to occur in Samoa, where it is represented solely by the genotype.

46. *Neolollius viridis* Muir.

Neolollius viridis Muir, *t. c.*, p. 584, figs. 8, 8a. 1921.

Tutuila : two male specimens from Afono Trail, 25.ix.1923 (Swezey and Wilder).

Previously found in Tutuila.

Capelopterum Melichar

Capelopterum Melichar, *Abh. K.K. zool.-bot. Ges. Wien*, III, 4, p. 210. 1906.

The seven species placed by Melichar in this genus are distributed from Ceylon to the Solomon Islands ; one species is known to occur in Samoa, and one in Niue (Savage Island).

47. *Capelopterum maculifrons* Muir

Capelopterum maculifrons Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 582. 1921.

Upolu : twenty-eight specimens from various localities, and various collectors.

Tutuila : four specimens from Pago Pago, ix.1923 (Swezey and Wilder) ; 14.xii.1925.

Savaii : two specimens from Fagamalo, xi.1925.

Previously known to occur in Tutuila.

LOPHOPIDAE

Buxtoniella g. n.

Head slightly narrower than thorax ; length of vertex in middle 1.5 times the width, apex slightly rounded, base slightly emarginate, a very faint transverse mark near apex and a very faint longitudinal line down middle, two small depressions near base, sides nearly straight. Frons gradually widening for basal two-thirds, then more suddenly narrowing to apex, leaving the sides angular at that point where a ridge runs across the gena beneath the antennae ; an exceedingly faint medio longitudinal carina. Clypeus without lateral carinae, median carina distinct. Pronotum slightly shorter than vertex, base straight, three carinae, the middle anteriorly faint ; mesonotum slightly shorter than pronotum. First segment of antennae as wide as long, second segment terite, considerably longer than wide. The front and middle legs distinctly flattened and broadened.

Tegmina thick, fairly narrow, apex narrowed and rounded, reaching beyond apex of abdomen; suture distinct; claval veins forking slightly distad of middle, ending in apex of clavus, a distinct longitudinal median ridge from base to shortly before middle; venation obscure, forming a reticulation over most of the tegmen. Wings rudimentary.

The male genitalia consists of an outer, subtubular, curved periandrium with an inner penis which is tubular at base and produced into two processes, each bearing a curved process near middle; the bridge is large. The female genitalia have the ovipositor sheaths (dorsal valves) developed into a pair of flat discs, which secrete wax; the apex of the anal segment is produced into a pair of flattened appendages, which also secrete wax.

The position of this genus is an enigma to the writer. Superficially it appears to belong to the Issidae; but the genitalia of both sexes and the frons suggest the Lophopidae, and it appears best to place it in the group containing *Kasserota* and allies, which, according to Baker's classification, would be in the subfamily Acarinae, of the family Lophopidae. The morphology of the Eurybrachidae, Lophopidae and Issidae requires a much closer study than has been accorded to it, in order to establish better characters for their separation.

48. *Buxtoniella hopkinsi* sp. n. Figs. 20-25.

Male; length 3.4 mm.; tegmen 3 mm.

Frons, clypeus and genae shiny black, a small yellow mark on gena at its junction with side of clypeus, at base of frons a transverse green band, vertex brownish. Anterior portion and lateral areas of pronotum black, shiny, posterior portion yellowish with a tinge of green; mesonotum black; antennae dark brown. Legs black or dark brown, shiny, anterior, thin portion of first and second tibiae white; hind tarsi pale. Abdominal segments dark brown, hind margin of sternites yellowish. Tegmina on basal half or two-thirds shiny black, apical portion white, reticulations with dark brown or black spaces.

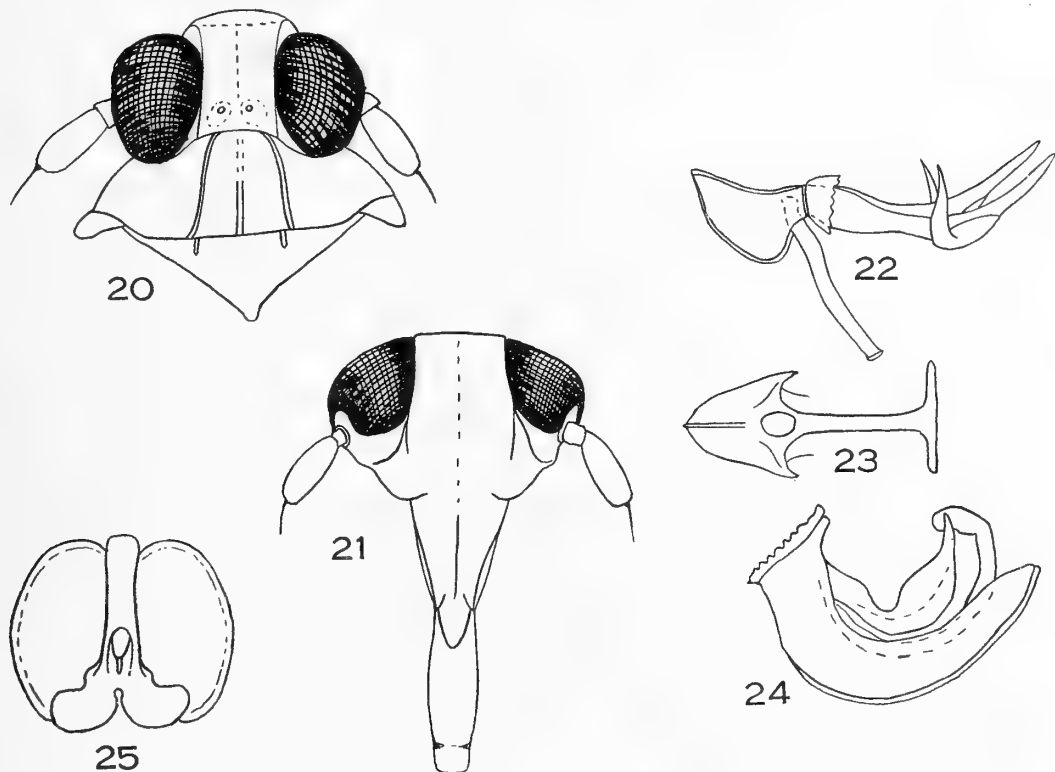
Anal segment about as wide as long, base narrow, suddenly widening; genital styles large, meeting together in middle line and forming a cover like the bow of a boat.

Female; length 4.6 mm.; tegmen 4.9 mm.

In build like male. Frons light yellow, base with a band of green between two bands of red, vertex pale with a reddish tinge, clypeus brown. Anterior half and lateral areas of pronotum reddish-brown, posterior portion greenish,

mesonotum reddish-brown. Legs dark brown, without white seen in male. Otherwise as in male.

Described from six males and seven females.



TEXT-FIGS. 20-25.—*Buxtoniella hopkinsi* Muir, gen. et sp. n.: fig. 20, head and thorax, dorsal view; fig. 21, head, front view; fig. 22, penis, lateral view; fig. 23, bridge and apodeme, hind view; fig. 24, perianthrium, lateral view; fig. 25, anal segment and dorsal valve.

Upolu: Malololelei, 2000 feet elevation, taken on *Freycinetia* sp., 25.iv.1924 (Buxton and Hopkins); Malololelei, two males and five females, iv.1924 (Bryan).

49. *Buxtoniella bryani* sp. n.

Female: length 3.8 mm.; tegmen 5.4 mm.

In general build similar to *B. hopkinsi*.

Vertex reddish-brown, base of frons with an obscure greenish band, rest of frons and the clypeus except apex dark brown, apex of clypeus and labium pale; antennae and legs dark brown, apical half of hind tibiae and hind tarsi

pale ; abdomen yellowish. Base of tegmina to apex of clavus and the pronotum and mesonotum black, rest of tegmina white or slightly yellowish, the veins and membrane being of the same colour.

Savaii : one female from Safune, v.1924 (Bryan).

RICANIIDAE

So far only one genus of this family has been reported from Samoa.

Plestia Stål

50. *Plestia kellersi* Muir

Plestia kellersi Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 577. 1921.

Savaii : nineteen specimens from Safune, in lower forest, 1000–2000 feet elevation, v.1924 (Bryan).

Tutuila : seven specimens from Pago Pago, ix.1923 (Swezey and Wilder) ; one specimen from Afono Trail, ix.1923 (Swezey and Wilder).

Upolu : one specimen from Tuaefu, ix.1923 (Swezey and Wilder) ; three specimens from Apia, iii.1924.

The specimens from Tutuila have the apical margin of the tegmen more extensively and distinctly margined with fuscous. The four specimens from Upolu have still less fuscous.

Previously known to occur in Tutuila.

51. *Plestia anomala* Muir

Plestia anomala Muir, *Proc. Haw. Ent. Soc.*, IV, 3, p. 578, fig. 5. 1921.

Savaii : nineteen specimens from Safune, lower forest, 1000–2000 feet elevation, v.1924 (Bryan).

Tutuila : six specimens from Pago Pago, three from Gafasa and one from Afono Trail, ix.1923 (Swezey and Wilder).

Upolu : one specimen from Tuaefa, ix.1923 (Swezey and Wilder) ; and three from Apia, iii.1924 (Buxton and Hopkins).

Previously met with in Tutuila.

LIST OF TEXT-FIGURES

- Text-fig. 1. *Andes lamononi*, male genitalia, lateral view.
- „ 2. *Ptoleria baumanensis*, aedeagus and anal segment, lateral view.
- „ 3. *Ptoleria buxtoni*, aedeagus and anal segment, lateral view.
- „ 4. *Myndus semibrunneus*, male genitalia, lateral view.
- „ 5. *Myndus sordidus*, male genitalia, lateral view.
- „ 6. *Myndus seminiger*, male genitalia, lateral view.
- „ 7. *Ugyops wilkesi*, head, dorsal view.
- „ 8. *Ugyops wilkesi*, male genitalia, ventral view.
- „ 9. *Ugyops rufus*, head, dorsal view.
- „ 10. *Ugyops bryani*, head, dorsal view.
- „ 11. *Vanua poyeri*, female genitalia, dorsal view.
- „ 12. *Vanua hopkinsi*, male genitalia, lateral view.
- „ 13. *Vanua hopkinsi*, female genitalia, dorsal view.
- „ 14. *Suva upolensis*, male genitalia, lateral view.
- „ 15. *Suva upolensis*, male genitalia, ventral view.
- „ 16. *Suva albipennis*, male genitalia, lateral view.
- „ 17. *Suva albipennis*, male genitalia, ventral view.
- „ 18. *Pyrrhoneura samoensis*, male genitalia, lateral view.
- „ 19. *Levu samoensis*, male genitalia, lateral view.
- „ 20. *Buxtoniella hopkinsi*, head and thorax, dorsal view.
- „ 21. „ „ head, front view.
- „ 22. „ „ penis, lateral view.
- „ 23. „ „ bridge and apodeme, hind view.
- „ 24. „ „ periandrium, lateral view.
- „ 25. „ „ anal segment and dorsal valve.

PSYLLIDAE (CHERMIDAE)

BY PROF. D. L. CRAWFORD, Honolulu

(With 4 Text-figures)

THIS family is well represented in the fauna of the South Pacific Islands, a certain degree of resemblance indicating a close relationship in the species of the various islands, and a tendency toward general distribution of many of the species.

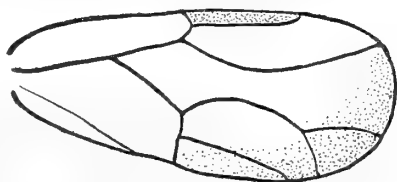
In the collections submitted to me by Dr. Buxton, and by the Bishop Museum in Honolulu, seven species of Psyllidae are represented.

PAUROPSYLLINAE

1. *Paurocephala wilderi* sp. n. (Text-fig. 1.)

Resembling *P. psylloptera* Crawford, but smaller. Length of body, female about 1.0 to 1.5 mm., male less than 1 mm. Colour dark chocolate-brown to black, except legs, base of antennae and metasternum, and sometimes the ventral portion of abdomen light brown or straw colour.

Head short, nearly as broad as thorax, deflexed; vertex smooth, with posterior ocelli only a little elevated. Antennae about one and a half times as long as width of head including eyes. Eyes rather small, usually brown or black.



TEXT-FIG. 1.—*Paurocephala wilderi*
Crawf., sp. n. Elytron.

Thorax arched, relatively broad, smooth, finely reticulated. Metascutellum with a small, blunt epiphysis, dorsad. Legs slender. Forewings a little longer than body, clear except a brownish area in apical portion. Hind wings smaller, clear.

Abdomen of female dark brown or black, with a few light brown markings;

male with ventral portion of abdomen yellow-brown. Genital segment of female sharply deflexed, acutely pointed.

Tutuila, eleven females and seventeen males, collected by Swezey and Wilder, 22.ix.1923, on "Ficus No. 8"; also one male taken by A. F. Judd at Tau, Manua Group, 24.ii.1926, and one male on the Leone Road, Tutuila, 19.ii.1924 (Bryan).

CARSIDARINAE

2. *Tyora buxtoni* sp. n. (Text-fig. 2)

Related to *T. congrua* Walker, but specifically quite distinct and smaller.

General colour dark brown, with lighter streaks on dorsum of thorax and the ventral portion of abdomen mostly light brown; antennae black or brown, basal segment lighter; legs dark; forewings with broad dark brown band along posterior margin and narrower band along each vein, giving a general dark appearance to forewings; hindwings clear.



TEXT-FIG. 2.—*Tyora buxtoni* Crawf.,
sp. n. Elytron.

Body (of male) about 3 mm. long, slender; forewings 4 mm. long; antennae 2.5 mm. long.

Head small; vertex nearly flat, with posterior margin raised a little and posterior ocelli elevated; front ocellus between bases of antennae, which are somewhat enlarged and give a birostrate appearance to front of head. Antennae slender and several times as long as width of head. Rostrum long and conspicuous.

Thorax not strongly arched, moderately broad; legs slender, with conspicuous spur at base of hind tibiae. Forewings long and slender, tapering to a point at apex, with veins conspicuous; two pseudo-crossveins as is typical of this genus.

Upolu, two males, at Lalomanu, Aleipata, 29.iii., xi.1924.

Tyora appears to be a South Pacific genus, somewhat related to *Carsidara* and *Tenaphalara*. The two other known species of this genus are *Tyora congrua* Walker, and *Tyora ornata* (Kirkaldy), first described in the genus *Nesiope*. Other species have been erroneously referred to this genus: *T. hibisci* Froggatt should be known as *Mesohomotoma hibisci* (Froggatt); *T. indica* Crawford

should be known as *Mesohomotoma lutheri* (Enderlein); *T. sterculiae* Froggatt does not belong to the present genus but should be referred to another, perhaps *Neocarsidara*.

3. *Mesohomotoma camphorae* Kuwayama *

Several specimens from Samoa, and a large number in another collection from Fiji, agree in every respect with Kuwayama's description of this Formosan species. It would appear to be a widely distributed species in the South Pacific Islands. This species in Formosa, however, was found on camphor trees while the Fiji specimens before me were taken on foliage of the milo tree, which is somewhat related to *Hibiscus*. A very closely similar species (*Tyora hibisci* Froggatt) was described in 1901 as occurring on *Hibiscus* foliage in Australia. While I have not had the opportunity of examining authentic specimens of Froggatt's species, there is no doubt that the Formosan species is either identical with it or differentiated only by very minor characteristics. The fact that the milo tree is rather closely related to *Hibiscus* is of special interest in this connection.

Apia, Upolu, two males and two females, 30.iv.1925; one female, Pago Pago, 14.xii.1925; one male and three females, Pago Pago, 12.iv.1924 (Bryan).

There are a number of psyllid nymphs taken on *Hibiscus* foliage on Efate Island, New Hebrides, by P. A. Buxton, 3.vii.1925. These may be nymphs of *Mesohomotoma hibisci* (Froggatt), or perhaps of *M. camphorae*.

TRIOZINAE

4. *Megatrioza asiatica* Crawford †

Two specimens of this species were taken on Tutuila, by Swezey and Wilder, 5.ix.1923.

5. *Megatrioza vitiensis* (Kirkaldy) ‡

This widely distributed species was found by Bryan on Tutuila,

* *Trans. Sapporo Nat. Hist. Soc.*, Vol. II, p. 180. 1907.

† *Philippine Journ. Science*, Vol. X, p. 266, 1915; *t. c.* Vol. XV, p. 197. 1919.

‡ *Triozia vitiensis* Kirkaldy—*Proc. Hawaiian Ent. Soc.*, Vol. I, p. 103. 1907. *Megatrioza vitiensis* (Kirk.) Crawford—*Philippine Journ. Science*, Vol. XV, p. 195. 1919.

7.ix.1924, thirty-three specimens of both sexes having been collected by him on foliage of *Eugenia malaccensis*, the common food plant of this species.

6. *Megatrioza swezeyi* sp. n. (Text-fig. 3.)

Rather similar to *M. vitiensis* (Kirkaldy) in general aspect, but differing somewhat in shape and venation of forewings and in the size of hindwings. The forewings are narrower and more acutely pointed at apex, as compared with *M. vitiensis*, with the venation as indicated in the accompanying illustration. A striking characteristic of this species is the extreme reduction of the hindwings, to tiny stubs barely visible at the base of the front wings.



TEXT-FIG. 3.—*Megatrioza swezeyi*
Crawf., sp. n. Elytron.

The body is about 2 mm. long, while the front wings are 5 to 6 mm. long, and more than three times as long as broad. The vertex and thoracic dorsum are sparsely pubescent, brown to dark brown in colour, without the dorsal stripes and markings characteristic of *M. vitiensis*. The genal cones are small, very short, usually yellowish or whitish in colour. The hind tibiae have only a very small spur at base. The genital appendages are similar to *M. vitiensis*, indicating a close relationship between the species.

Apia, Upolu, one female, 15.ix.1923; Tutuila, one female (Swezey and Wilder), Pago Pago, 30.ix.1923. A third specimen is before me, taken at Lau, Fiji (Bryan). All these are in the Bishop Museum collection.

7. *Trioza samoansis* sp. n. (Text-fig. 4.)

Length of body about 2 mm.; length of forewing 2.8 to 3.3 mm. General colour light brown or reddish brown; forewings smoky brown, with apical portion much darker.



TEXT-FIG. 4.—*Trioza samoansis*
Crawf., sp. n. Elytron.

Head small, deflexed; vertex pubescent, with a foveal depression on each side of the median line; genal cones small, a little shorter than vertex, subacute. Antennae very slender, nearly three times as long as width of head.

Thorax arched, pubescent on dorsal surface; pronotum short, much depressed below vertex and mesonotum; latter narrowly rounded in front. Legs slender. Forewings with costa and veins setigerous.

Abdomen slender ; female genital segment small, about half as long as rest of abdomen, acutely pointed ; male genital segment small, with anal valve and forceps very small, latter slender, acutely pointed.

Pago Pago, Tutuila, nine specimens collected 30.ix.1923, by Swezey and Wilder.

This species in its wing venation somewhat resembles *Trichopsylla walkeri* Thomson, of Europe.

LIST OF TEXT-FIGURES

- Text-fig. 1. *Paurocephala wilderi*, elytron.
,, 2. *Tyora buxtoni*, elytron.
,, 3. *Megatrioza swezeyi*, elytron.
,, 4. *Triozza samoansis*, elytron.

COCCIDAE, APHIDIDAE AND ALEYRODIDAE

By F. LAING, M.A., B.Sc.

(With 3 Text-figures)

THE most comprehensive list of the Coccidae of Samoa which has hitherto appeared is that by Doane and Ferris (*Bull. Ent. Res.*, VI, pp. 399–402, 1916). In the following list species mentioned in that paper are marked with an *, the additional information gathered from an examination of the material collected by Dr. P. A. Buxton and Mr. G. H. E. Hopkins being added where necessary. A few other records, with references to the sources whence they are culled, are added. Most of the species of Coccidae found on the Samoan Islands have a wide distribution and have evidently been introduced on cultivated plants, but a few would appear to be indigenous; further collecting on wild plants will doubtless reveal new and interesting forms and enable us to form an opinion as to the affinities of the Coccid fauna. The total number known from the Islands is now slightly more than that recorded for Fiji (27), and considerably larger than for the Society group (19).

In the case of the Aphididae and Aleyrodidae, the numbers are so few that no comment is called for; in the former family probably all the species have been introduced recently, and in the latter, of the two species found, one has travelled practically wherever its host plant, sugar-cane, has gone, and the other, which is apparently new to science, appears to have affinities with a Javanese species.

COCCIDAE

1. *Asterolecanium bambusae* Bdv.*

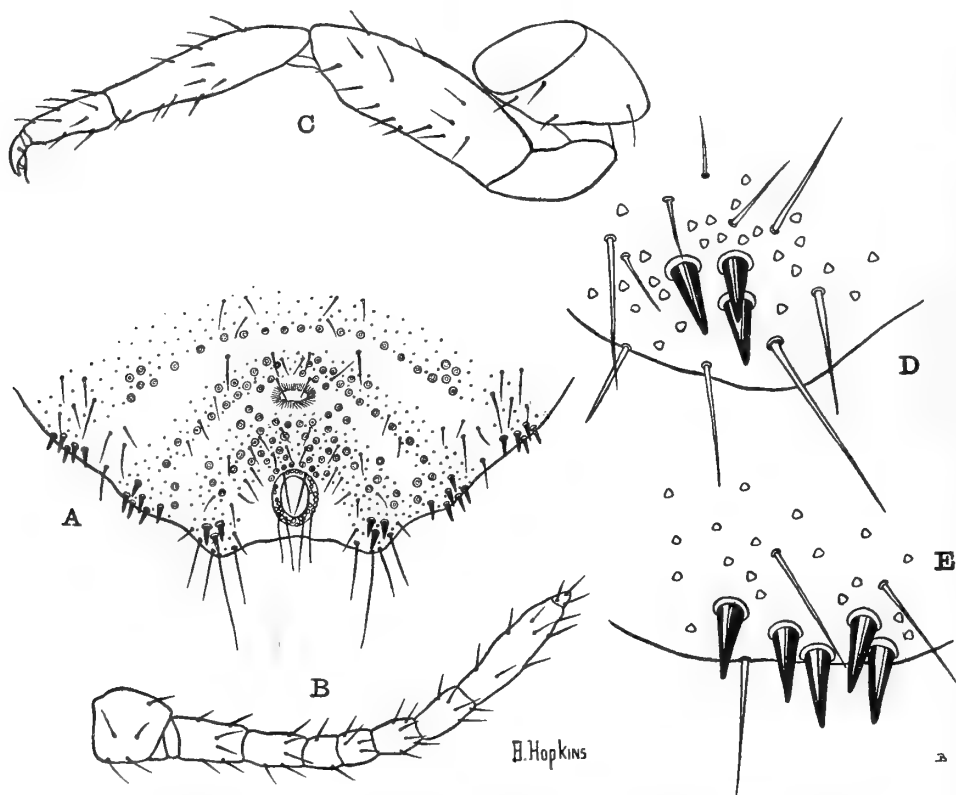
Said by Doane and Ferris to be very abundant on bamboo, but not represented from any of the Samoan Islands in the collections made by Messrs. Buxton and Hopkins.

2. *Pseudococcus brevipes* (Ckll.)

Apia, iv.1924, on an unknown bush.

3. *Pseudococcus citri* (Risso.)

This species was well represented in the collection, but unfortunately most of the host plants were unidentified. The records are: Malololelei, vi.1924 (probably on a member of the Piperidaceae), and on the rind of lemons, iii.1924; Vailima, 18.x.1924; Suvaïi, Tuasivi, 8.ii.1924; Manono Is., where it was attended by a species of ant, 10.vi.1924; and Falelatai, 5.ii.1924, on Cachew.



TEXT-FIG. 1.—*Pseudococcus cocotis* (Mask.). A, posterior segments of the body of adult ♀; B, antenna; C, hind leg; D, anal cerarius; E, penultimate cerarius.

4. *Pseudococcus calceolariae* (Mask.)

Recorded by Swezey, *Hawaiian Planters' Record*, XXVIII, p. 215, 1924. In view of Morrison's paper (*Jour. Agric. Res.*, XXXI, pp. 485–500, 1925) on this and closely allied species, and the confusion that exists as to the records, *P. calceolariae* is included here for completeness, but without comment as to the correctness of the determination.

5. *Pseudococcus cocotis* (Mask.) Text-fig. 1.

On stems of coconut associated with ants, Apia, 31.i.1924. This species is not unlike *P. vitiensis* Gr. and Lg., but it differs from the latter in the less protuberant and less strongly defined cerarii, and in the more pronounced body setae. The following additional notes may serve to make the species more easily recognisable. Antennae 8-segmented, the proportions of the segments being 30, 25, 20, 10, 12, 11, 16, 40. Cerarii 17 pairs, each cerarius with more than 2 spines, the figures being as follows: (17) 3, (16) 4-5, (15) 5, (14) 4-5, (13) 5, (12) 4-5, (11) 4, (10) 3, (9) 3, (8) 5-6, (7) 3, (6) 4-5, (5) 3-4, (4) 5, (3) 4-6, (2) 5, (1) 5; each cerarius with one or more secondary setae and trilocular pores not crowded together nor differentiated from the general body surface. Transverse series of large circular pores on the last three abdominal segments, with a few on the fourth. Legs unequal, the proportions of the tibiae and tarsi of the first being 60:40, the second 65:40, and the third 80:43; claw without a denticle. Anal ring setae subequal to those of anal cerarius. Length approximately half as great as breadth, 2.5 mm.

For the determination of this species, I have depended upon preparations in E. E. Green's collection assigned to *P. cocotis* (Mask.) by Ehrhorn.

6. *Pseudococcus comstocki* (Kuw.)

Tuasivi, Savaii, 8.ii.1924, on the leaves of *Pandanus*.

7. *Trionymus sacchari* (Ckll.)

Recorded by Swezey, *Hawaiian Planters' Record*, XXVIII, p. 215, 1924.

8. *Ceroplastes rubens* Mask.*

This species seems to be common throughout the islands. It was found on an unknown species of fern at Apia, 7.ii.1924, and Vailima, 8.vi.1924; on an undetermined garden tree and on cinnamon at Malua, Upolu, ix.1924; and on another unknown shrub on Malololelei, vii.1924. It was also found at Hog Harbour, Santo Island, New Hebrides; and on *Melaleuca* sp. at Tontouta, New Caledonia; but it is a species which is abundant throughout the whole of the South Pacific Islands. Doane and Ferris state that it was very abundant on mango in Samoa.

9. *Pulvinaria psidii* Mask.*

Though Doane and Ferris record this species from the islands, it was not represented in the present collections except from New Hebrides, where it was found on the leaves of lemon.

10. *Eucalymnatus tessellatus* Sign.*

This species was represented by its variety *perforatus* Newst. on cinnamon, Malua, Upolu Island, ix.1924 ; and on *Morinda citrifolia*, Apia, ix.1925.

11. *Lecanium psidii* Green *

Apia, v.1925, on *Morinda citrifolia*. The material was in bad condition, but the characters which could be distinguished agree with specimens from Ceylon.

12. *Coccus acuminatus* (Sign.)

Apia, 24.iii.1924, on pineapple ; Vila, New Hebrides, 24.vi.1925, on an epiphytic fern. This species is very closely allied to *C. diversipes* Ckll., described from material from the Philippine Islands, also from an epiphytic fern, and, except for the strongly chitinised dorsum and rather more numerous pores the latter could not be distinguished from *C. acuminatus* ; younger stages of *C. diversipes* agree in every particular with *C. acuminatus*. At most, *C. diversipes* should not rank as more than a variety of *C. acuminatus* (Sign.).

13. *Coccus frontalis* (Green) *

On unidentified plant.

14. *Coccus hesperidus* (L.)

Apia, 18.v.1924, on the leaves of *Carica papaya*.

15. *Coccus viridis* (Green) *

Apia, 28.iii., iv.1924, and Vailima, 600 feet up, 24.i.1924, in all cases upon unidentified host plants.

16. *Saissetia coffeae* (Walk.) *

Apia, v.1925, on *Morinda citrifolia* and on an unknown host plant, 24.viii.1924 ; Vila, New Hebrides, 9.vii.1925, on the stems and leaves of lemon. I have reverted to the prior name for *S. hemispherica* (T.T.).

17. *Saissetia nigra* (Nietn.) *

Apia, 2.viii.1925, on balsam, and on the 22.i.1925, on an unknown bush. It was also represented from Swains Island, Central Pacific, on *Morinda citrifolia* ; on *Hibiscus* sp. Ais Island, New Hebrides ; on *Hibiscus rosa-sinensis*, Santo Island, New Hebrides ; and on an undetermined shrub, Tanna, New Hebrides.

18. *Saissetia oleae* (Bern.) *

On orange.

19. *Pinnaspis aspidistrae* (Sign.) *

On palms, bananas, oranges, etc.

19A. *Pinnaspis minor* (Mask.)

Not represented at all from Samoa, but found in plenty on Swains Island, Central Pacific, on Nanamea and Nanomega Islands, belonging to the Ellice Group, and on Fakaofu, Tokelau Island, the identified host plants being coconut and banana.

20. *Chionaspis citri* Comst.*

On orange.

21. *Chionaspis samoana* Doane and Ferris *

On palm. This species should be placed in the genus *Phenacaspis*.

22. *Aspidiotus cydoniae* Comst.*

On orange (see also Cockerell, *Proc. U.S. Nat. Mus.*, Vol. XVII, p. 621, 1895).

23. *Aspidiotus cyanophylli* Sign.

Upolu, on a dicotyledonous plant (Lindingersch, *Zeit. f. wiss. Insektenbiol.*, Bd. VII., p. 173, 1911).

24. *Aspidiotus destructor* Sign.

This is stated by Sasser (*Journ. Econ. Ent.*, Vol. VIII, p. 269, 1915) to have been intercepted on coconuts imported from Tutuila into America. The species has a wide distribution throughout the Oceanic Islands, but must be very rare in Samoa, for, although efforts were made to obtain specimens, it was not represented in the collections.

25. *Aspidiotus lataniae* (Sign.) Green

Upolu, on *Ptychosperma vitiensis* (Lindinger, *op. cit.*, p. 175). If Lindinger based his determination on the insect described under this name by Green in his *Coccidae of Ceylon*, I, p. 49, the record should refer to *A. destructor*. It may be, however, the true *A. lataniae*, of Signoret, of which *A. cydoniae* Comst. may or may not be a synonym. With doubt existing as to which species the authors had before them, we prefer to keep the records of *A. cydoniae*, *A. destructor* and *A. lataniae* distinct.

26. *Aspidiotus pangoensis* Doane and Ferris *

On coconut husks, Pago Pago. We have had this species also from Fiji on the same host plant.

27. *Aspidiotus maskelli* Ckll.

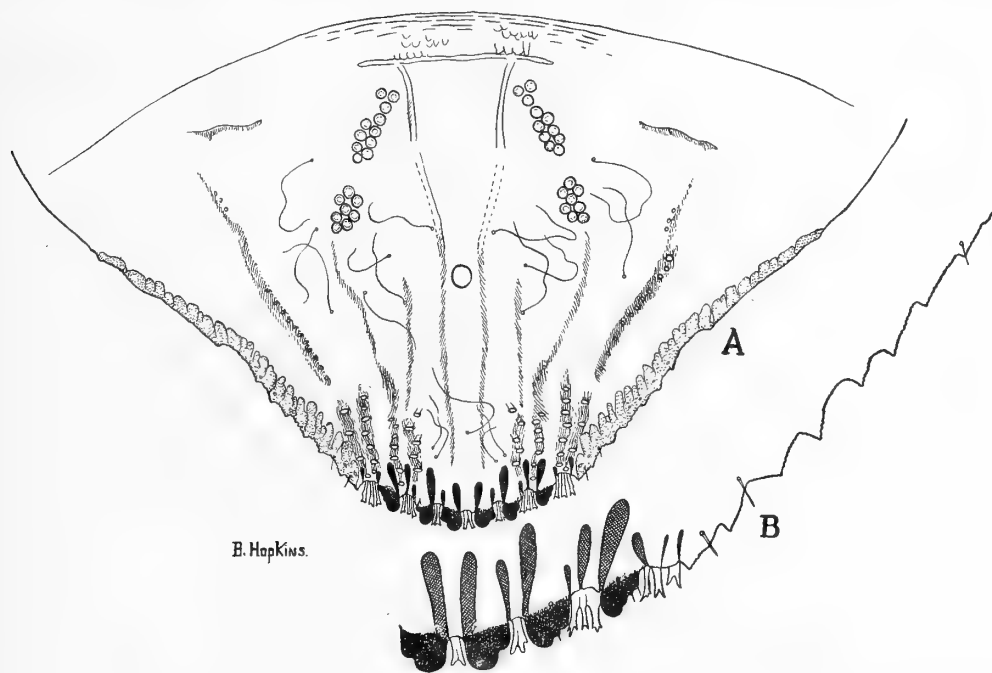
Intercepted on oranges imported into California from Samoa (Maskew, *Mthly. Bull. Californian State Commiss. Hort.*, Vol. V, p. 75, 1916).

28. *Chrysomphalus buxtoni* sp. n. Text-fig. 2.

Puparium deep brown to black, subcircular to elliptical, flattish around the marginal area gradually rising to the very low nipple-like deep black excentric larval exuvium; surface somewhat irregular and deposited in concentric layers. Size 4.5 mm. by 3 mm. in elliptical specimens, 3 mm. diameter in subcircular ones.

Adult female broadly pyriform; longish setae sparsely distributed around the margin of cephalothorax and abdomen and on the dorsal surface of the former; antennae consisting of a minute tubercle with a long curved seta; no parastigmatic pores. Pygidium with 3 pairs of lobes each with a more or

less straight inner margin, but with a well-marked shoulder on the outer, in the case of the third pair a second notch observable ; beyond the last pair of lobes the margin produced into 5 or more sharp conical projections each minutely serrated on the outer border, these projections gradually diminishing in size anteriorly ; the usual number of squamae in the intervals between the lobes, 3 or 4 between the third pair and the first marginal projection ; a very strong paraphysis arises from the inner margin of each lobe, another about half the size from the outer margin, and another of intermediate length from the middle



TEXT-FIG. 2.—*Chrysomphalus buxtoni* Laing, sp. n. ; A, pygidium of adult ♀ ; B, pygidial fringe.

of the second interval ; marginal area beyond the last pair of lobes strongly chitinised and cristate. Perivulvar pores in four groups, 12 to 13 in the anterior and 8 to 9 in the posterior ; 4 transverse calli on the anterior part of the pygidium, the median pair more or less united ; two single series of pores arising from the interval between the second and third lobes and between the third and the first marginal projection ; filiform spinnerets numerous ; anal orifice near the middle of the pygidium. Length 2 mm. ; breadth 1.5 to 2 mm.

Malololelei, on bark of an unknown shrub, vii.1924.

The affinities of this species are probably with *C. rossi* (Mask.).

29. *Chrysomphalus ficus* Ashm.

Not represented in the present collections, but intercepted on oranges imported from Pago Pago to California (Maskew, *Mthly. Bull. Californian State Dept. Agric.*, Vol. IX, p. 299, July 1920).

30. *Chrysomphalus rossi* Mask.*

On coconut (Swezey, *Hawaiian Planters' Record*, Vol. XXVIII, p. 217, 1924).

31. *Melanaspis samoana* Ldgr.

On *Myristica hypargyrea* (*Zeitsch. f. wiss. Insektenbiol.*, Bd. VII, p. 177, 1911).

32. *Odonaspis secreta* Ckll.*

On bamboo.

33. *Lepidosaphes beckii* (Newm.) *

Upolu, on orange.

34. *Lepidosaphes gloveri* (Pack.)*

Apia, on crotons, iv.1925 ; also on orange, but said by Doane and Ferris to be much less common than *L. beckii*.

35. *Lepidosaphes moorsi* Doane and Ferris *

Upolu, near Apia, on trunks of orange.

36. *Parlatoria cinerea* Doane and Hadden *

Stated by Doane and Ferris to be common on orange. Described from specimens collected in the Society Islands, on orange and cultivated vine.

APHIDIDAE

37. *Aphis gossypii* Glov.

Apia, on *Morinda citrifolia*, 29.viii.1924 ; also from Swains Island, Central Pacific, on the same host plant.

38. *Aphis laburni* Kalt.

Apia and Aleipata, on plants belonging to the Leguminosae. *Aphis leguminosae* Theob., described from specimens received from Egypt, would appear to

be this species, and I suspect that the *A. medicaginis* Koch, recorded by Van der Goot from various localities in the East, is the same ; as is also the *A. medicaginis* Koch recorded by Das (*Mem. Indian Mus.*, VI, p. 203, 1918) from the Lahore district. The British Museum (Natural History) has received specimens of *A. laburni* from Ceylon, on a variety of Leguminous host plants.

39. *Aphis nerii* Boyer

Neiafu, Tonga and Malololelei, Upolu, ii.1924, on imported *Asclepias*. This species is also present in Fiji, and is found in Europe, North and South America, the West Indies, Africa, India, Java, etc.

40. *Aphis tavaresi* Del Guercio

Upolu, Malololelei, on lemon trees, 15.ii.1924. There is a remarkable resemblance between the apterous viviparous ♀♀ of this species and those of *Toxoptera aurantii* (Boyer), and, where this form only is present, it is necessary to rely for determination upon the relative lengths of and the imbrications on the cornicles. In the alate viviparous ♀♀ this difficulty does not arise, for, apart from the difference in neuration in the two species, the colour distribution in the antennae and the sensoriation of the third antennal segment provide good characters for differentiation. It is possible that *Myzus citricidus* Kirk. is this species, in which case the latter name would have priority.

41. *Toxoptera aurantii* (Boyer)

Apia, on leaves of Cacao and *Hibiscus tiliaceus*, iv. and v.1924.

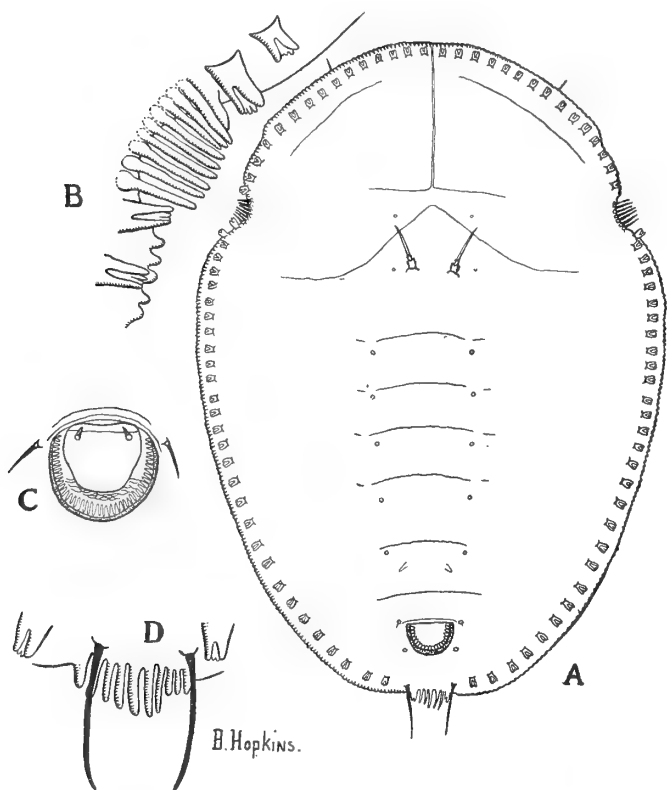
ALEYRODIDAE

42. *Aleuroplatus* (Orchamus) *samoanus* sp. n. Text-fig. 3.

Pupa Case.—Very pale stramineous with a thin coating of transparent secretion which forms a thick layer around the margin and raises the pupa case from the leaf surface slightly. A distinct median longitudinal carina running the whole length ; the abdominal segments visible ; margin somewhat crenulate and curved slightly inwards at the thoracic tracheal folds.

When treated with potash, oval, one-third longer than broad, constricted at thoracic tracheal folds. Margin minutely crenulate with small setae situated

at very remote intervals; immediately within the margin is a complete single series of large very conspicuous tubercles, each being composed apparently of



two side pieces and two median, with the apex terminating in four sharp points; 29 to 30 of these tubercles lie on the cephalic portion, and a similar number on each side between the thoracic and caudal folds. Thoracic tracheal fold almost cup-shaped with about 10 long finger-like processes arising from the base, all of approximately the same length. Caudal fold produced into a comb, the median teeth the longest. Suture separating thorax and abdomen curved cephalad, not reaching margin; median cephalic suture present. Abdomen with segments demarked medianly; five pairs of medio-lateral circular pores, one pair to each segment, a pair of strong median spines imme-

TEXT-FIG. 3.—*Aleuroplatus (Orchamus) samoanus* Laing, sp.n.; A, pupa case; B, thoracic tracheal comb; C, vasi-form orifice, D, caudal fold.

diately behind the transverse suture, a pair of short spines in the usual position at the anterior lateral angle of the vasi-form orifice, and another large pair submarginally on either side of the caudal comb. The interior lateral and posterior margin of vasi-form orifice with a comb of teeth. Length 0.7–0.8 mm.; breadth 0.5 mm.

Upolu Island, Apia, thickly coating the upper surface of the leaves of cultivated *Croton*,¹ iv.1925.

The shape of the submarginal series of tubercles, the colour of the secretion

¹ It does not follow that, because it was found on this cultivated plant, the species has recently been introduced. *Crotons* were probably carried about the Pacific by the early Polynesians, and they are still used in ritual in many parts of Melanesia.—P. A. BUXTON.

and the difference in the thoracic tracheal comb *inter alia*, serve to distinguish this species from *A. (O.) mammaeferus* Q. and B., described from material from Java.

43. *Neomaskellia bergii* (Sign.)

Apia, where it is apparently a common species on sugar-cane; Tutuila (Bishop Museum). It is found in Java, Fiji (Levuka, Rewa), Philippines, Ceylon, Mauritius, San Thomé.

LIST OF TEXT-FIGURES

- Text-fig. 1. *Pseudococcus cocotis* (Mask.). A, posterior segments of the body; B, antenna; C, hind leg; D, anal cerarius; E, penultimate cerarius.
,, 2. *Chrysomphalus buxtoni* sp. n. A, pygidium of adult ♀; B, pygidial fringe.
,, 3. *Aleuroplatus (Orchamus) samoanus* sp. n. A, pupa case; B, thoracic tracheal comb; C, vasiform orifice; D, caudal fold.



INSECTS OF SAMOA

AND OTHER SAMOAN TERRESTRIAL ARTHROPODA

PROPOSED ARRANGEMENT :—

- Part I. Orthoptera and Dermaptera.
- „ II. Hemiptera.
- „ III. Lepidoptera.
- „ IV. Coleoptera.
- „ V. Hymenoptera.
- „ VI. Diptera.
- „ VII. Other Orders of Insects.
- „ VIII. Terrestrial Arthropoda other than Insects.

The work will be published at intervals in the form of numbered fascicles. Although individual fascicles may contain contributions by more than one author, each fascicle will be so arranged as to form an integral portion of one or other of the Parts specified above.



